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ABSTRACT

The instructional materials contained in this guide are designed for consumer and nutrition education and have been structured in accordance with federal regulations for vocational consumer and homemaking educational programs. Instructional objectives and activities are divided into three levels: level 1 for youth in exploratory/beginning programs, level 2 for intermediate level programs, and level 3 for advanced home economics students. Each level contains an overview providing concepts to be covered, generalizations, objectives, and evaluation measures for the section. Exercises in level 1 involve the food value of seafood, differences between finfish and shellfish, and seafood snacks. Provided in level 2 are exercises and charts on nutrition, fish cuts and forms, inspection and grading, characteristics of good quality seafood, season availability, market forms, and seafood purchase, preparation, and storage. Therapeutic diets, characteristics of good quality, cleaning and filleting, sanitation, storage, processing, cost analysis, consumer information and advanced preparation are covered in level 3 activities. In addition to conventional exercises, this guide contains such supplementary activities as seafood puzzles, riddles, and scrabble. Drawings, references, and resource materials are appended. (CE 025 858 is a seafood manual for school food service personnel and CE 025 859 is a seafood guide for occupational food service programs.) (MN)

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SEAFOOD PRODUCTS:

AN INSTRUCTIONAL GUIDE FOR

HOME ECONOMICS PROGRAMS

by

BEST COPY AVAILABLE

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FOREWARD

The materials contained in this publication were developed and field tested through funding from the Department of Commerce (Sea Grant). Field test sites included both coastal and non-coastal school systems. These instructional materials were utilized in home economics classes in Hampton, Virginia; Roanoke, Virginia; and Mount Joy, Pennsylvania.

Nutrition education and consumer education are the primary emphases of all objectives and activities. In accordance with federal regulations for Vocational Consumer and Homemaking Educational programs, an effort has been made to structure all activities to meet the recommended program emphases. A direct result of this concern is that no recipes are included. (We do not wish to appear to promote a particular product or a cooking and "stewing" image.) The instructor must therefore select recipes appropriate for student ability, season of the year, locality, etc.

Instructional objectives and activities are divided into three levels. Level I is designed for youth in exploratory/beginning programs. Four days of activities culminate in the application of nutrition concepts to snack foods. Level II was developed for intermediate level programs. The six day mini-unit applies nutrition and consumer concepts to food purchasing and storage. Level III is appropriate for advanced home economics students.

Each level contains an overview stating the concepts to be covered, generalizations, objectives and evaluation measures for the

section. In addition, information for the teacher is included in a section entitled "Casting Ahead." Each level may be used alone as a mini-unit, or the lessons may be integrated into a nutrition/consumer foods unit.

The word seafood is used throughout to mean all edible animal foods taken from the water, either salt water (tuna, mackerel, lobster) or fresh water (crayfish, catfish, rainbow trout). Many seafoods may be taken from both salt and fresh water (salmon, shad). Seafoods include two subdivisions: finfish (flounder, trout) and shellfish (oysters, shrimp).

LEVEL I

Seafoods are readily available and nutritious, yet are an underutilized food source for many people. Because the English language does not have a word which easily describes both kinds of seafoods, we use the term seafoods to mean any edible animal from fresh water or the ocean. (See Foreward)

Seafood is a rich source of nutrients, including easily digested protein, niacin, iodine and vitamins A and D. In addition, most seafood is low in fat, which makes it even more suitable for calorie-conscious people.

Level I is an introductory unit on seafood and is aimed toward encouraging middle school/junior high students to sample seafood and appreciate its nutrient value. Many students will be familiar with the fish sandwich served in the cafeteria. It is suggested that the teacher utilize a variety of types of seafoods in order to promote a broad awareness of the many ways it can be used, especially for snack foods.

LEVEL I

CONCEPTS:

Food Value of Seafood
Finfish - Shellfish
Seafood Snacks

GENERALIZATIONS:

Seafood has a high protein content and is relatively low in fat and calories.
Seafood is classified as finfish or shellfish.
Seafood can be prepared quickly and easily.

OBJECTIVES:

Upon completion of this level, the student will:

1. following in-class pantomimes depicting nutrient function, orally identify with 100% accuracy the appropriate nutrient.

2. given "Fish Forms" handout, differentiate between finfish and shellfish with 100% accuracy.

3. plan for laboratory experience using recipe and market order form provided by the teacher.

4. given appropriate supplies and directions, prepare simple recipes using seafood, according to the correct cooking principles as judged by the instructor.

5. taste and evaluate seafood dishes prepared by other students using the provided evaluation form.

EVALUATION:

Nutrient Charades
"Fish Forms" handout
Completed market order
Techniques used during food preparation and outcome of product
Completed Seafood Lab Evaluation

Casting Ahead

Review Bibliography and select references appropriate for your use.

Review supplemental activities which follow the daily lesson plans for Level I. These may be utilized with students who complete assignments early, desire extra credit or need alternate activities.

Transparencies or other visuals (see appendix) should be prepared prior to presentation of these materials.

Copy and cut apart "Nutrient Charades" strips. (Lesson 1)

Reproduce "Fish Forms" handout. (Lesson 1) Make enough copies for each class member or laminate copies for future use.

Prior to final Seafood Lab Evaluation, review terms and the form to facilitate student completion.

Order any films or filmstrips which will be used.

Reserve needed audio-visual equipment.

LESSON 1

CONCEPTS:

Food Value of Seafood
Finfish - Shellfish

OBJECTIVE:

Following in-class pantomimes depicting nutrient function, orally identify with 100% accuracy the appropriate nutrient.

Teacher Directions

5 minutes — Questions/Discussion

Who has been fishing? Where? What kind did you catch? What kinds of fish are native to this area? Who has tasted seafood? Where? How was it prepared? Have you ever prepared fish? What are some stories or myths you've heard about fish? Fish is in what food group? What nutrients do fish have that help your body grow strong and healthy?

25 minutes — Refer to bulletin board for nutrition review.

EVALUATION: Nutrient Charades

OBJECTIVE:

Given "Fish Forms" handout, differentiate between finfish and shellfish with 100% accuracy.

Teacher Directions

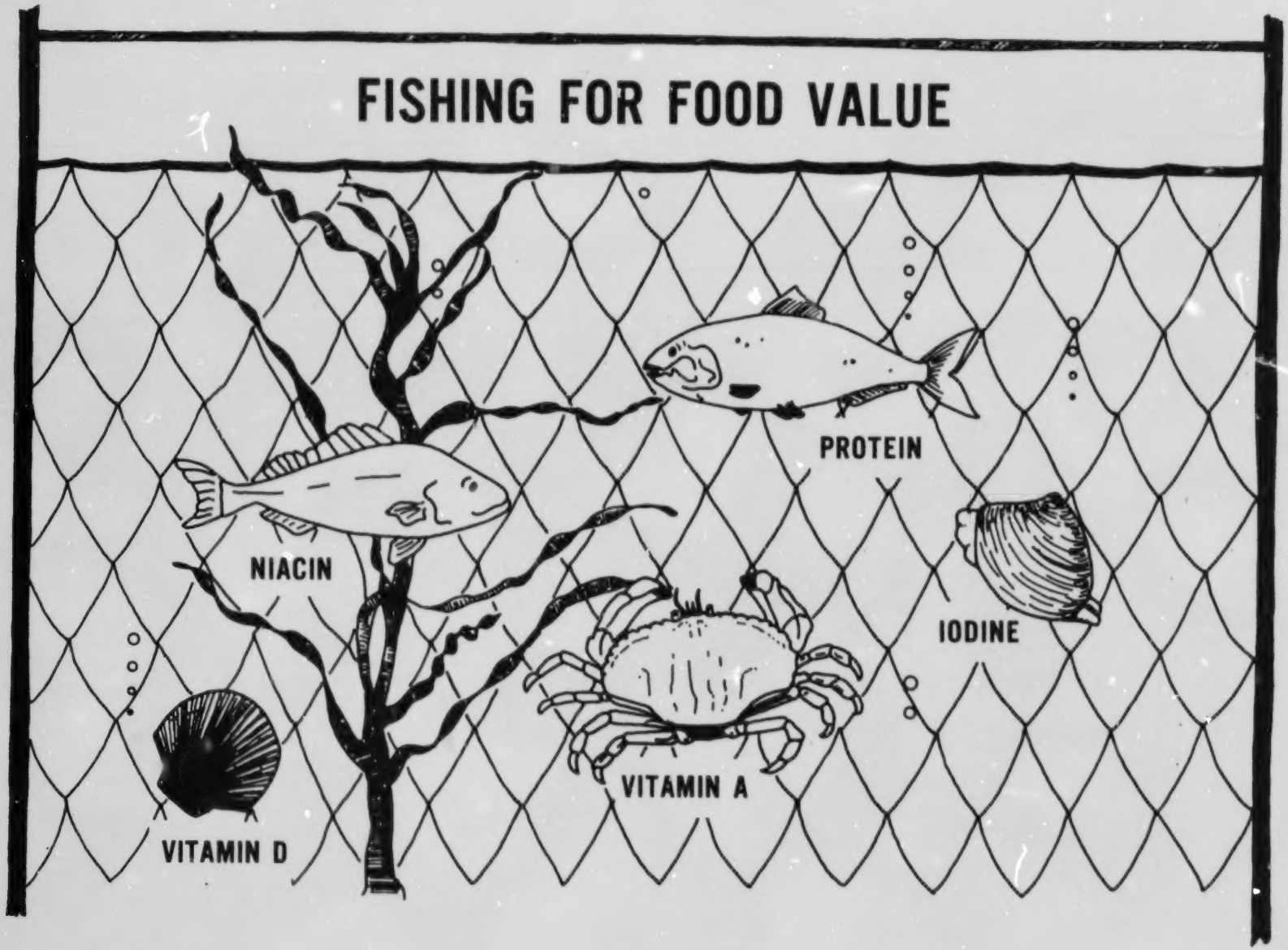
20 minutes — List on chalkboard fish species suggested by students.

Define finfish and shellfish. Using transparencies or flip chart, show examples of each. (Appendix)

Refer to species list on board and have students orally categorize each item as finfish or shellfish.

EVALUATION: Using "Fish Forms" handout, have students complete for evaluation.

TOTAL SUGGESTED TIME: 50 minutes


FISHING FOR FOOD VALUE
PROTEIN
NIACIN
IODINE
VITAMIN A
VITAMIN D

NUTRIENT CHARADES

Directions: Copy and then cut apart the nutrient charade strips and distribute to five class members. Allow about five minutes for students to decide how to pantomime or "act out" nutrient function. Each of the "actors" will proceed to the front of the class to perform nonverbally while other class members guess which nutrient is being described. Continue until all five nutrients have been used.

(Note: This is an especially useful technique for evaluating with low-ability readers.)

PROTEIN:	I build strong muscles and help to keep your hair shiny and healthy.
NIACIN:	I help to build and repair nerve cells and tissues. I also aid in digestion by helping the body use some nutrients for energy.
VITAMIN A	I help you see better at night and also keep your skin smooth and healthy.
VITAMIN D	I am needed for your body to use calcium and phosphorus to build strong bones and teeth. Another name for me is the "Sunshine Vitamin."
IODINE	I am a mineral which helps regulate the thyroid gland and prevent goiters (growths on the neck).

FISH FORMS

Seafoods may be many shapes, sizes and colors, but there are only two basic forms.

A. Draw an example of a finfish.

Draw an example of a shellfish.

B. Unscramble the letters to find the names of the seafoods species. Beside the name of each species, indicate what type of seafood it is, using F for Finfish and S for Shellfish.

_____ NATU _ _ _ _

_____ RUTTO _ _ _ _ _

_____ PHRISM _ _ _ _ _ _

_____ NOMALS _ _ _ _ _ _

_____ SEBTROL _ _ _ _ _ _ _

_____ LAMC _ _ _ _

_____ BARC _ _ _ _

_____ NEDAIRS _ _ _ _ _ _ _

FISH FORMS - KEY

B. NATU -- TUNA (F)

PHRISM -- SHRIMP (S)

SEBTROL -- LOBSTER (S)

BARC -- CRAB (S)

RUTTO -- TROUT (F)

NOMALS -- SALMON (F)

LAMC -- CLAM (S)

NEDAIRS -- SARDINES (F)

LESSON 2

CONCEPT:

Seafcod Snacks

OBJECTIVE:

Plan for laboratory experience using recipe and market order form provided by teacher.

Teacher Directions

10 minutes — Discuss:

How have you tasted prepared seafood?
What different ways can it be prepared?

15 minutes — Demonstrate preparing simple snack food using seafood. All students should taste. Discuss.

Some snacks using seafood include:

Dips
Spreads
Pizza
Sandwiches
Hors d'oeuvres
Canapes

25 minutes — Have students plan for laboratory experience for the following day. Pre-measure ingredients if time permits.

EVALUATION: Completed market order form.

(Note: Teacher should use market order form of his/her choice.)

TOTAL SUGGESTED TIME: 50 minutes

Class period _____ Date _____

Students' Names _____

Fish:	Grains:
Dairy Products:	Canned Foods:
Fresh Fruits and Vegetables:	Miscellaneous:

LESSON 3

CONCEPT:

Seafood Snacks

OBJECTIVE:

Given appropriate supplies and directions, prepare simple recipes using seafood, according to correct cooking principles as judged by the instructor.

Teacher Directions

30 minutes — Have students prepare seafood dishes using provided recipes (Appendix).

EVALUATION: Techniques used during preparation and outcome of product. (It is suggested that the instructor prepare a checklist itemizing all the preparation techniques to be used and the criteria to be used in judging the final product.)

OBJECTIVE:

Taste and evaluate seafood dishes prepared by other students using provided evaluation form.

Teacher Directions

20 minutes — Have students taste and evaluate all seafood dishes prepared, using the provided evaluation form.

EVALUATION: Completed Seafood Lab Evaluation

TOTAL SUGGESTED TIME: 50 minutes

SEAFOOD LAB EVALUATION

RECIPE NAME	TYPE OF SEAFOOD PREPARED	METHOD OF PREPARATION	DESCRIBE TASTE: Delicate flavor Strong fish taste/odor Well-seasoned Salty or flat (choose one or more which describes the taste)	HOW DO YOU LIKE IT? 1-I will never eat it again! Yuk! 5-I loved it! Yum! (rate on scale of 1-5)
Group 1				
Group 2				
Group 3				
Group 4				
Group 5				

SUPPLEMENTAL ACTIVITIES

LEVEL I

SUPPLEMENTAL ACTIVITIES

1. Fish Concentration - make two copies of each page

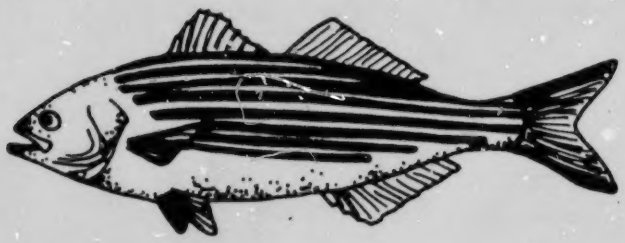
   Using construction paper, mount each item. The name of each specie is printed on the card. Shuffle cards and place them face down on the table. Two students take turns flipping the cards over, two at a time. If the cards do not match, they should be replaced face down. The object of the game is to make a "match" of like cards. When a student makes a match, he/she receives an extra turn. The winner is the person with the greatest number of matching sets after all the cards are face up.

POT	SCALLOP	STRIPED BASS
CRAB	TONGS	SALMON
SHRIMP	CATFISH	HERRING
CLAM	FLOUNDER	FISH TRAWLER
LOBSTER	SQUID	

2. Using "Fish Concentration" cards, the student could separate them into two categories, finfish or shellfish, to demonstrate ability to differentiate between each.

3. Advanced groups may use one card with name and another with picture of species to reinforce spelling skills.

4. Fishy Word Scramble



STRIPED BASS

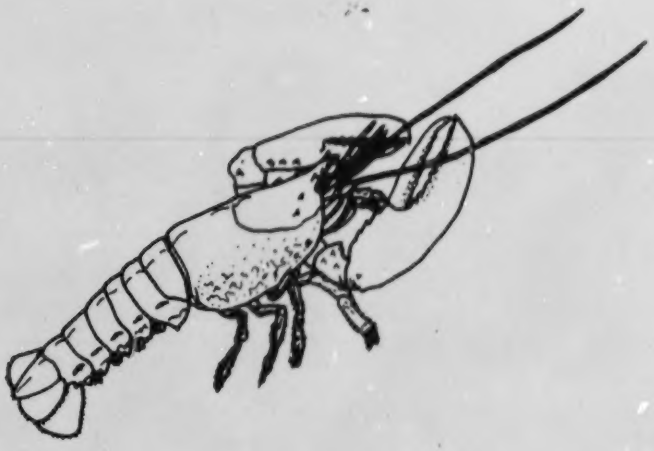
SALMON

HERRING

CATFISH

CRAB

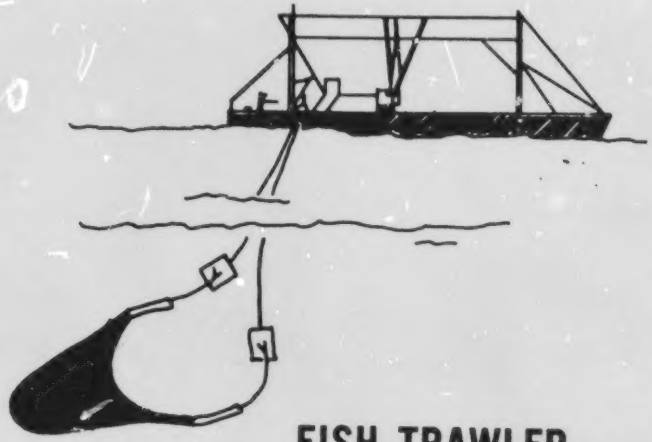
SHRIMP



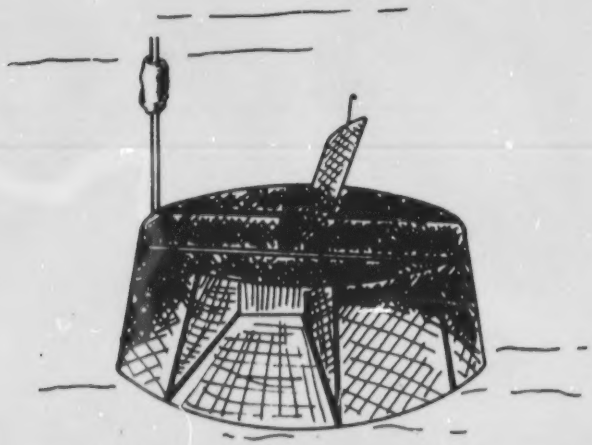
LOBSTER

SCALLOP

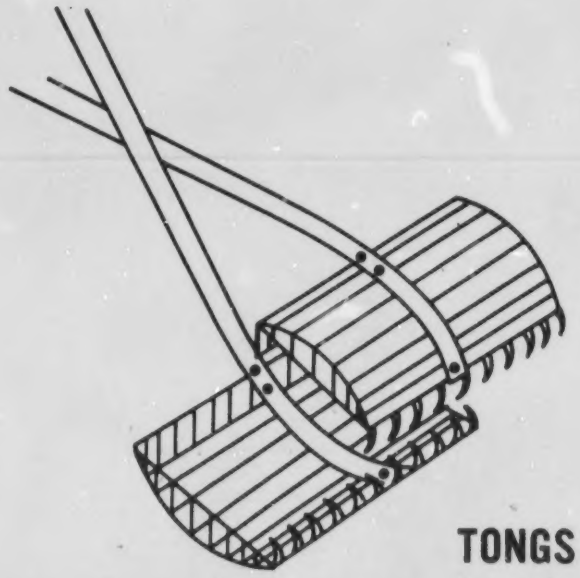
CLAM



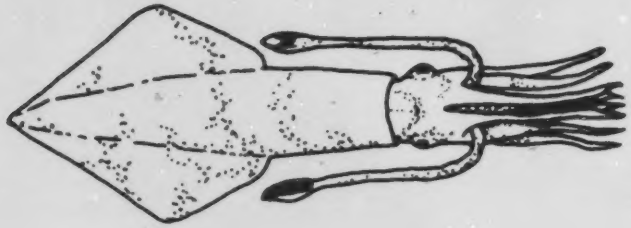
FISH TRAWLER



CRAB POT

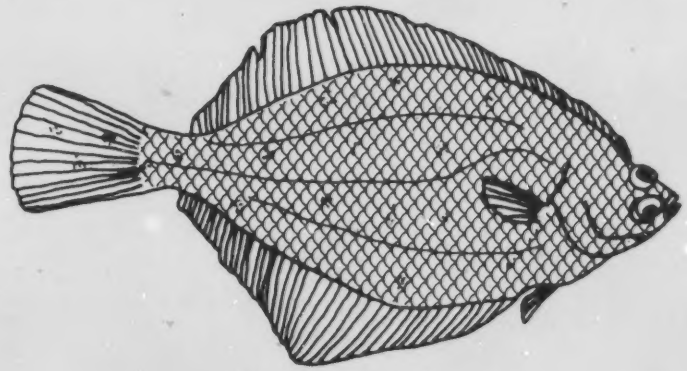


TONGS



SQUID

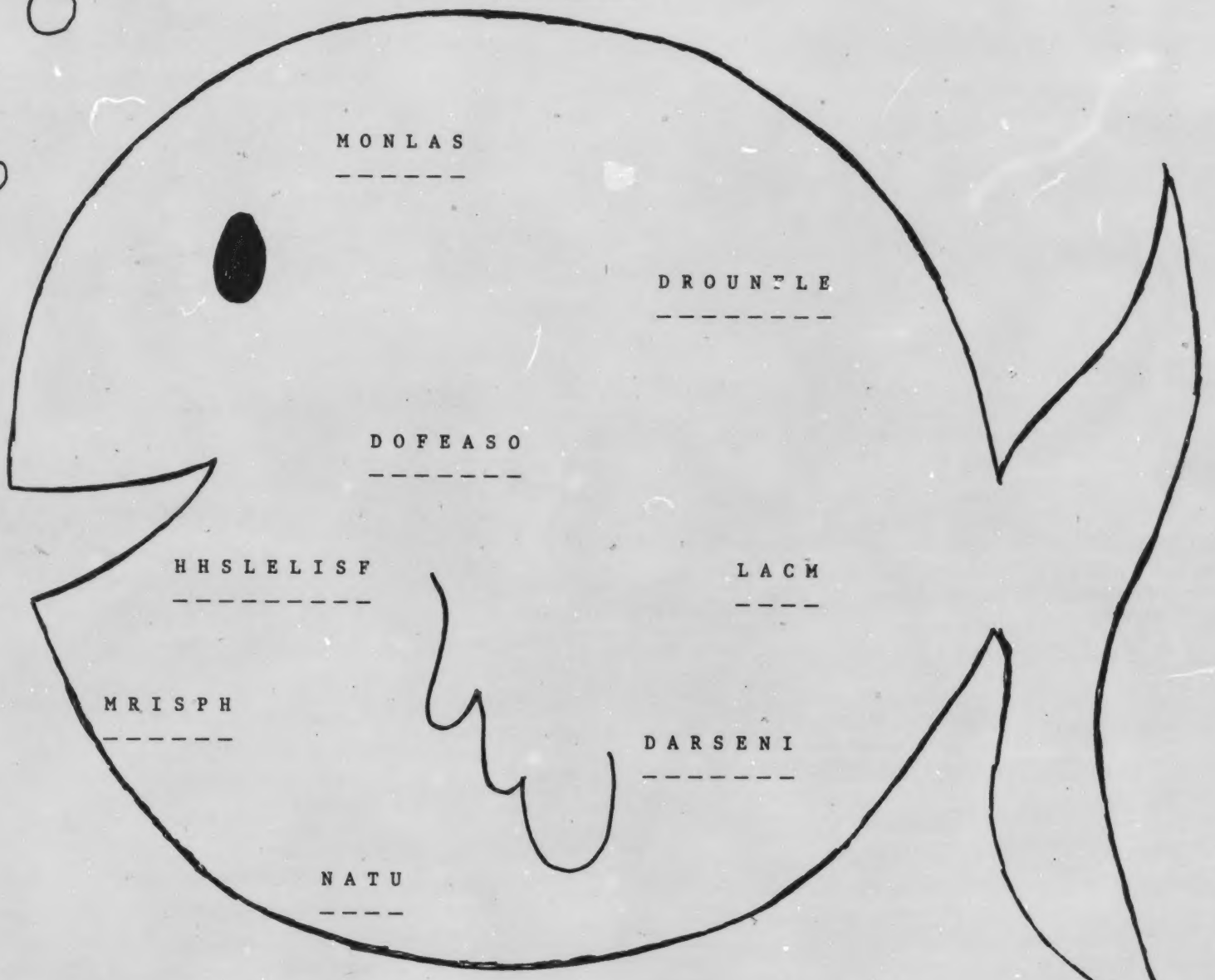
27



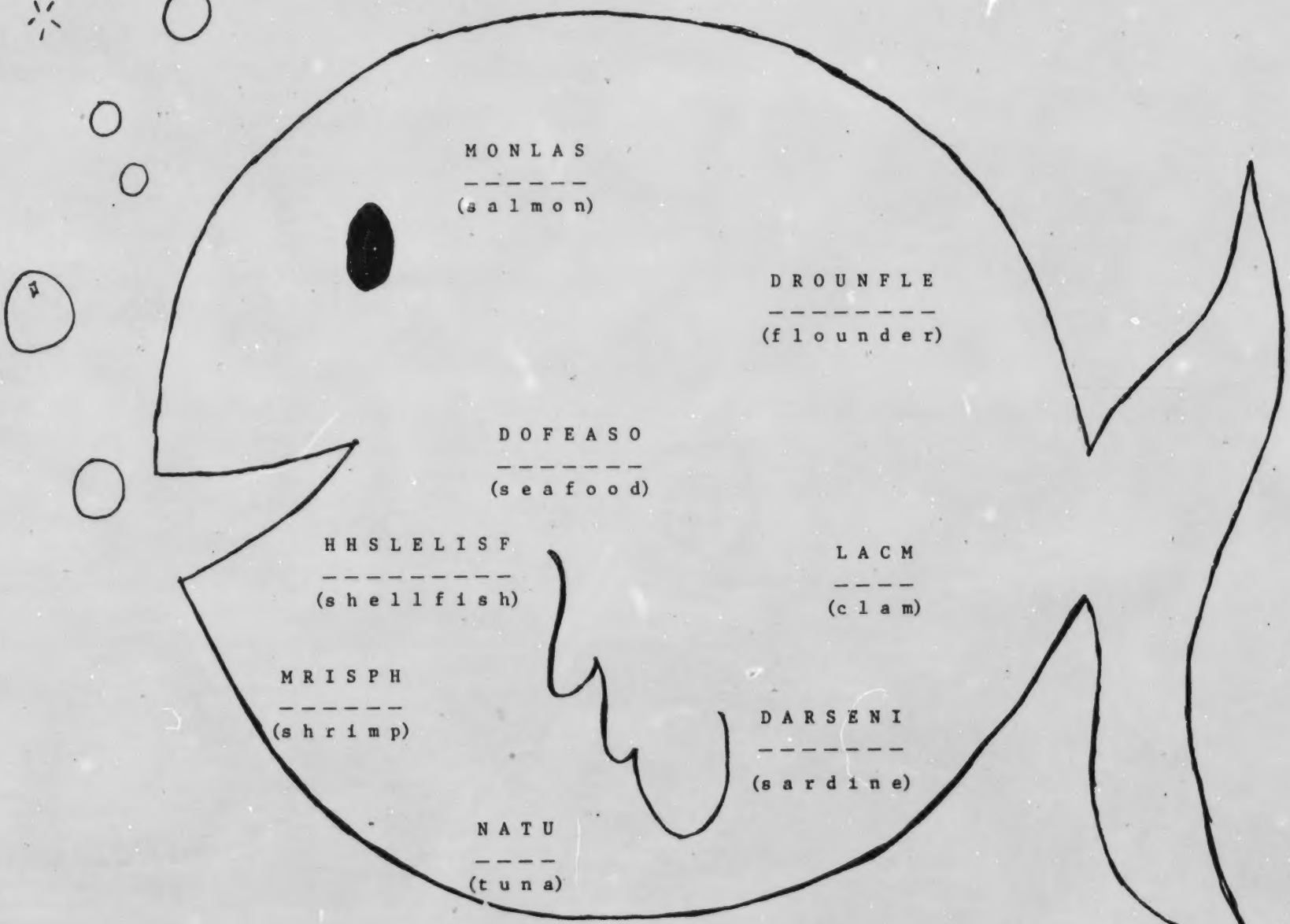
FLOUNDER

28

FISHY WORD SCRAMBLE



FISHY WOR[illegible]SCRAMBLE KEY



LEVEL II

Seafood is an underutilized source of nutrition in the American home. Over 70% of all seafood is consumed in restaurants and establishments outside the home. One reason for the low amount of seafood used in the home may be a lack of consumer information concerning how to purchase, store and prepare fish. Vocational home economics classes are an excellent place to begin preparing consumers to obtain the greatest nutritive value for their food dollar.

Seafood offers a second advantage to the consumer. In addition to being nutritious, seafood requires a short amount of preparation time, thereby conserving both time and energy.

Level II is a beginning/intermediate unit on seafood aimed toward acquainting Homemaking I and II students with fish as an economical, nutritious protein alternative in the diet. Consumer awareness as to wise selection, storage and preparation of seafood is promoted in both the in-class and supplemental activities.

LEVEL II

CONCEPTS:

Nutrition
Finfish - Shellfish
Fish Cuts and Forms
Inspection and Grading
Characteristics of Good Quality Seafood
Season Availability
Market Forms
Purchasing Seafood
Storage of Fish
Preparation of Seafood Dishes

GENERALIZATIONS:

Seafood may be categorized into two major divisions.
Seafood is an economical and rich source of protein that is easily digested and suitable for people of all ages.
Seafood may be purchased in a variety of market forms which require varying amounts of preparation.
U.S. Grade Standards and Inspection Marks are aids in determining quality of seafood.
Physical characteristics may be used to determine the quality of seafood.
Seasonal changes dictate the availability of many fish species.
The most common market forms of seafood include fresh, frozen and canned.
Seafood purchases should be planned according to the type of fish, cuts and forms, and the amount of fish most suitable to the recipe.
Proper storage is necessary to maintain quality and avoid spoilage of seafood.
Seafood may be prepared in a variety of ways for versatile meal planning.

OBJECTIVES:

Upon completion of this level, the student will:

1. Write or verbally identify, with 100% accuracy, three nutrients which are found in fish and state the function of each nutrient.

2. Given "Primary Proteins" and "Nutrient Ranking," evaluate sources of high protein, low fat foods and cite three examples.

3. Differentiate between finfish and shellfish with 100% accuracy, using "Holy Mackerel!"

4. List and describe with 100% accuracy three fish cuts and forms.

5. Locate the official inspection stamp and grade shield on two packaged seafood products and state the meaning of each.

6. Given two pictures of fish (one fresh and one not-fresh), identify with 100% accuracy four characteristics of fresh fish.

7. Given the names of ten fish species, locate each on the "Seafood Species Chart" and state with 100% accuracy when each is available.

8. Given "Supermarket Scavenger," locate ten species of seafood that may be found in two out of three basic market forms.

9. Using "Amount to Purchase" and "Figuring Fish," state the amount of seafood to purchase with 95% accuracy.

10. Given recipes, compute and compare the cost per serving of a seafood dish using at least two market forms of the same species as the main ingredient.

11. Prepare fish for refrigerator and freezer storage and state the length of time each method will safely preserve the fish.

12. Given recipe(s), prepare market order form and plan for lab work.

13. Prepare seafood recipes utilizing correct cooking principles as judged by the instructor.

14. Taste and evaluate seafood dishes prepared by other students using provided evaluation form.

EVALUATION:

Oral or written statement of three nutrients found in fish and their functions
Completed "Primary Proteins" and "Nutrient Ranking"
"Holy Mackerel!"
Oral or written description of three fish cuts and forms
Locate symbols in two packaged seafood products and state their meaning
Oral, written or observational identification of four characteristics of a fresh fish
Locate ten species and availability of each
Completed "Supermarket Scavenger"
"Figuring Fish"
Computed cost analysis of recipes
Properly stored seafood
Completed Seafood Preparation Checklist
Completed Market Order form
Completed Taste Panel Evaluation

Casting Ahead

Review bibliography and select references appropriate for your use--which follow the daily lesson plans for Level II.

Review Supplemental Activities. These are optional activities which may be used in class, for home assignments or with students who desire extra credit.

Duplicate "Primary Proteins" and "Nutrient Ranking" for each student, or each group of students. (Lesson 1)

Review "Less Often Utilized Species of Fish" for class discussion. (Lesson 2)

Duplicate "Holy Mackerel!" for each student. (Lesson 2)

Prepare transparencies or other visuals of Fish Cuts and Forms in Appendix. (Lesson 2)

Collect available market forms of fish for student inspection. (Lesson 2)

Duplicate "Conundrum - Fishy Finds at the Market" for each student. (Lesson 2)

Much of the information for Lessons 3 and 4 may be collected during a field trip to a grocery store or fish market. If this is planned, the trip should be arranged prior to beginning the unit. A "Super Fish Check List" is provided for students to use when comparing seafood.

An outside resource person may provide much of the information for Lessons 3 and 4. If this is planned, arrangements for securing the speaker should be made prior to beginning the unit.

Visit area markets and collect several (approximately ten) empty packages or wrappers from fish or fish products for student location of inspection stamp and grade shield. (Lesson 3) Note: Federal inspection and grading are optional, therefore locating items may require visiting several markets and grocery stores.

Prepare pictures or transparencies of inspection stamp and grade shield (Appendix). (Lesson 3)

Order <u>or</u> prepare visuals of fresh fish characteristics. (Lesson 3)

Purchase a fresh, whole fish for student observation if this activity is planned. (Lesson 3)

Duplicate "Seafood Species Chart" for each student. (Lesson 3)

Prepare a list of ten species for students to locate on "Seafood Species Chart." (Lesson 3)

Duplicate copies of "Seafood: Amounts to Purchase Per Serving" and "Figuring Fish" for each student or laminate several copies for students working in groups to share. (Lesson 4)

Duplicate provided market order form or use one of your choosing for student group use in planning laboratory experience. (Lesson 2)

Duplicate provided preparation checklist or use one of your choosing for student use in laboratory experience. (Lesson 6)

Duplicate Evaluation Form to be used in student laboratory experience.

Order any films or filmstrips which will be used.

Reserve needed audio-visual equipment.

LESSON 1

CONCEPT:

Nutrition

OBJECTIVE:

Write or verbally identify with 100% accuracy three nutrients which are found in fish and state the functions of each nutrient

Teacher Directions

10 minutes	Discuss what food sources come to us from the water.
	Define terms: fish, seafood
10 minutes	Review of nutrients and their functions.

EVALUATION: Oral or written statement of three nutrients found in fish and their function.

OBJECTIVE:

Given "Primary Proteins" and "Nutrient Ranking," evaluate sources of high protein, low fat foods and cite three examples.

Teacher Directions

30 minutes	Have students, working in small groups or independently, complete "Primary Proteins" and "Nutrient Ranking." (Nutrient Fact Sheet included).
	Discuss findings concerning the amounts of nutrients found in the foods as well as their ranked order.

EVALUATION: Completed "Primary Proteins" and "Nutrient Ranking."

TOTAL SUGGESTED TIME: 50 minutes

PRIMARY PROTEINS

Directions: Using the Nutrient Fact Sheet, locate an example of each of the types of foods listed in column #1. Record the name of the specific food as well as information on the amount of calories, protein, fat and carbohydrate that is contained in an 85-gram portion. Using the information you have collected, advance to "Nutrient Ranking."

FOOD - 85 GRAM SERVING	CALORIES	PROTEIN	FAT	CARBOHYDRATE
BEEF				
CHEESE				
EGGS				
FISH				
LAMB				
LEGUMES AND NUTS				
PORK				
POULTRY				

NUTRIENT FACT SHEET

The following calculations are for 85-gram (3 oz.) edible portions of the food product. This may be slightly more than a serving as serving sizes may vary for different foods.

FOOD	CALORIES	PROTEIN (grams)	FAT (grams)	CARBOHYDRATES (grams)
Beef				
*Chuck roast (braised)	278	22	19	0
Corned beef	183	21	10	0
Ground beef (regular)	243	20	17	0
Round steak (broiled)	221	23	12	0
*Sirloin steak (broiled)	328	19	27	0
Veal (*choice grade)	199	22	11	0
Cheese				
American	314	19	25	1
Cheddar	338	21	27	1
Cottage (creamed)	90	11	3	2
Swiss	314	23	23	1
Eggs (chicken)	138	11	9	1
Fish				
Bluefish	135	18	7	0
Clams	64	10	1	1.5
Cod	144	23	4	0
Flounder	171	25	6	0
Haddock	67	15	trace	0
Halibut	145	21	6	0
Oysters (Eastern)	56	7	1.5	3
Perch (Yellow)	77	16	0.5	0
Salmon	119	17	0.5	0
Shrimp	77	15	0.5	1
Tuna (water pack)	108	23	0.5	0
Lamb (chop)	298	12	27	0
Legumes/Nuts				
Lima beans	94	6	0.5	17
Navy beans	100	6	0.5	18
Split peas	98	6	trace	17
Peanuts (roasted, salted)	497	22	41	15
Peanut butter	500	21	42	15
Pecans	584	7	60	12
Pork				
Roast	317	18	25	0
Loin chop	355	19	29	0
Frankfurter	351	11	21	2
Poultry (dark meat chicken)	150	24	5	0

Adapted from: Composition of Foods. Agricultural Research Service, United States Department of Agriculture. Agriculture Handbook #8. 1975.

NUTRIENT RANKING

Directions: Using the information you collected on the nutritional value of foods found in the meat group, complete the following information cubes. In each cube, rank the foods in order of largest quantity of the particular nutrient to smallest quantity of that nutrient.

PROTEIN	CARBOHYDRATE
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.

FAT	CALORIES
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.

List three foods which you found to be high in protein and low in fat.

1.

2.

3.

LESSON 2

CONCEPTS:

Finfish - Shellfish
Fish Cuts and Forms

OBJECTIVE:

Differentiate between shellfish and finfish with 100% accuracy using "Holy Mackerel!"

Teacher Directions

20 minutes — List on chalkboard fish species familiar to students.

Define finfish and shellfish, describing characteristics of each and showing examples of each using transparencies. (Appendix)

Referring to the fish species list on chalkboard, have students orally classify each as a finfish or a shellfish.

Discuss less-often utilized species of fish. (Note: In discussion, be sure to include all species listed on "Holy Mackerel!")

EVALUATION: "Holy Mackerel!" (Non-reader may perform this activity orally or with the use of pictures.)

OBJECTIVE:

List and describe with 100% accuracy three fish cuts and forms.

Teacher Directions

30 minutes — Discuss: In what forms can fish be purchased? In what forms have you seen or eaten it? List on board.

Discuss fish cuts and forms using transparencies. (Appendix)

(References: Introductory Foods, p. 205-206; Seafood Products Lecture Guide, p. 59-62; Meal Management, p. 159-163; Foundations for Food Preparation, p. 295.)

Have students work "Conundrum - Fishy Finds at the Market."

EVALUATION: Oral or written description of three fish cuts and forms.

TOTAL SUGGESTED TIME: 50 minutes

HOLY MACKEREL!

I. Define finfish and shellfish, listing two characteristics of each. Draw an example of each.

II. Circle the species which does not belong in the classification with the others. In the provided space, indicate whether the remaining species are finfish or shellfish.

Shrimp, Crayfish, Trout _____

Tuna, Scallop, Sea Bass _____

Oyster, Flounder, Lobster _____

Sardine, Clam, Crab _____

Mackerel, Mussel, Clam _____

III. In the space provided, place an F if the species is a finfish, and an S if the species is a shellfish.

____ Salmon	____ Blue Crab
____ Flounder	____ Tuna
____ Trout	____ Cod
____ Bay Scallop	____ Gulf Shrimp
____ Sardine	____ Clam
____ Whiting	____ Herring
____ Mussel	____ Lobster

LESS-OFTEN UTILIZED SPECIES OF FISH

A few other varieties which may be considered seafood can be used in the commercial food service establishment. They include:

1. Caviar: Is the roe, or eggs, of 22 various sturgeons, whose eggs range in color from pearly gray to pale brown. The finest caviar is from the roe of the giant beluga sturgeon and is exported from the Soviet Union and Iran. It is very expensive. Caviar is used primarily for canapes and hors d'oeuvres.

2. Crayfish: Found in quantity in Louisiana and the Pacific Northwest, they are a small, lobster-like crustacean. They range in size from 1 inch to 8 pounds. There are 29 species in Louisiana alone, but only a few grow to edible size. Crayfish farming is becoming popular in some southern states.

3. Eel: Are harvested commercially in the St. Lawrence River, Canada; Cape Charles, Virginia and the Chesapeake Bay. Most are air-lifted to Europe. During colonial days, eel was considered a delicacy, but has since lost favor with all but a few gourmets. It may be pan fried or baked, filleted or pounded flat.

4. Frogs' Legs: Although an amphibian, they are classed as a seafood. Only the hind legs are marketed, and are most plentiful from April to October. Most come from India or Japan, two to three pairs per pound. They are best fried or sauteed and have a delicious, sweet-tasting meat.

5. Mussel: Abundant in New England and eastern Canada, this shellfish has never been as popular in America as in Europe. They are bivalve mollusks. The flavor of the meat is tangy, almost smoky.

6. Octopus: A mollusk, it has a flexible globular body and eight arms. The meat is flavorful and compares to chicken. Not eaten very often in the U.S., perhaps because of the horror movies, it is considered a delicacy elsewhere, especially in the Islands, Japan and Spain.

7. Shark: Is not consumed in the U.S., at least under its correct name. On the East Coast, the blue shark is the source of swordfish steaks. The blacktip shark is marketed in Florida as rock salmon and the English "fish 'n' chips" is batter-dipped white fillets. The non-use of shark in the U.S. is purely psychological.

8. Snails: A mollusk, this variety lives in a single, spiral shell. Americans are learning to eat this delicacy more and more. Marketed as "escargot," they are an expensive item on the restaurant menu.

9. Squid: A highly specialized mollusk, they have a relatively small market in the U.S. 80% of the squid is edible and contains 18% protein. It is one of the most abundant seafoods, but greatly under-utilized. Small squid are stuffed and cooked whole, large ones are cut in rings and pieces.

10. Turtle: Ranges from 4 to 25 pounds. Live turtles are butchered immediately and often frozen for fall and winter use. Its exotic flavor is known by gourmets the world over.

CONUNDRUM - FISHY FINDS AT THE MARKET

Directions: The strange-looking word combinations listed in Column I are really scrambled names of cuts and forms of fish. The phrases in Column II describe each. Unscramble the letters and match them with their description.

COLUMN I	COLUMN II	
SDREDES	1. _____	Fish as taken from the water.
KTESAS	2. _____	Boneless fish portions taken from the sides of fish.
NRDAW	3. _____	Whole fish with insides removed.
LIFLET	4. _____	Cross-section slices of fish.
ELWHO	5. _____	Fish with scales and entrails removed.
KSCNUH	6. _____	Pieces of cross-sections from large dressed fish

KEY: CONUNDRUM - FISHY FINDS AT THE MARKET

1. WHOLE

2. FILLET

3. DRAWN

4. STEAKS

5. DRESSED

6. CHUNKS

LESSON 3

CONCEPTS:

Inspection and Grading
Characteristics of Good Quality Seafood
Season Availability
Market Forms

OBJECTIVE:

Locate the official inspection stamp and grade shield on packaged seafood products and state the meaning of each.

Teacher Directions

15 minutes — Discuss inspection and grading of seafood.

Show pictures or transparencies of inspection stamp and grade shield (Appendix).

(References: Seafood Lecture Guide, p. 95-98; Foundations of Food Preparation, p. 292-293.)

EVALUATION: Student locates symbols on two packaged seafood products and states their meaning.

OBJECTIVE:

Given two pictures of fish (one fresh and one not-fresh) identify with 100% accuracy four characteristics of fresh fish.

Teacher Directions

10 minutes — Discuss characteristics of fresh fish using transparency (Appendix).

(Teacher may use example of fresh, whole, eviscerated fish to point out characteristics. References: Seafood Products Lecture Guide, p. 63-65; Coed, April 1972, p. 53-54; Forecast, April 1976, p. 26-27, 40.)

EVALUATION: Oral, written or observational identification of four characteristics of a fresh fish.

OBJECTIVE:

Given the names of ten fish species, locate each on the "Seafood Species Chart" and state with 100% accuracy when each is available.

Teacher Directions

15 minutes — Give students a list of ten species and have them locate the fish on the "Seafood Species Chart" and state when each is most available. (Appendix)

Discuss: What fish or seafoods are native to your area and when may they be obtained?

What fish or seafoods are available to your area and when may they be obtained?

Discuss relationship of availability and cost.

EVALUATION: Fish list and availability of each.

OBJECTIVE:

Given "Supermarket Scavenger" locate ten species of seafood that may be found in the three basic market forms.

Teacher Directions

10 minutes — Explain that fresh fish and seafood from various localities may be packaged and made available in three basic market forms throughout the United States.

Show examples of:
- fresh
- frozen
- canned fish

Discuss species and the variety of market forms in which they are available. Example: canned, frozen and fresh shrimp.

EVALUATION: Completed "Supermarket Scavenger"

TOTAL SUGGESTED TIME: 50 minutes

Seafood Species Chart

Name	Fat Content*	Forms Available	Where Available	When Available
Albacore (tuna)	Moderate	Whole (sometimes steaks, chunks)	Western coast	Summer
Butterfish	Moderate	Whole, drawn	Eastern Coast	Spring to late autumn
Catfish	Low	Whole, dressed, dressed & skinned	Great Lakes, other U.S. lakes, inland rivers	All year
Cod	Very low	Drawn, dressed, steaks, fillets, dried and salted	Northeastern, mid-eastern, western coasts	All year
Croaker	Low	Whole, drawn, fillets	Mideastern and southeastern coasts	March to October
Eel	Moderate	Whole, dressed, dressed and skinned	Eastern coast	All year
Flounder or sole	Low	Whole, dressed, fillets	Northeastern, mid-eastern, western coasts	All year
Grouper	Low	Drawn, dressed, steaks, fillets	Southeastern coast	November to May
Haddock	Low	Drawn, fillets	Northeastern coast	All year
Halibut	Very low	Steaks, fillets	Western coast	May to September
Mackerel	High	Whole, fillets	Northeastern, mid-eastern, western coasts	All year
Mullet	Moderate	Whole	Southeastern, Gulf coasts	April to November
Ocean Perch	Very low	Whole, fillets	Northeastern coast	All year

*Very low: Less than 2 percent fat; Low: 2-5 percent fat; Moderate: 6-10 percent fat; High: More than 10 percent fat

Seafood Species Chart (continued)

Name	Fat Content*	Forms Available	Where Available	When Available
Porgy	Low	Whole, drawn	Eastern coast	September to May
Salmon	Moderate	Whole, drawn, steaks, fillets	Western coast	Varies by areas
Shark	Low	Steaks, chunks, fillets	Western, southeastern, Gulf coasts	All year
Smelt	Low to Moderate	Whole, drawn, sometimes boneless	Northeastern, Western coasts	All year
Snapper, Red	Low	Whole, drawn, steaks, fillets	Gulf coast	All year
Spot	Low	Whole, drawn	Mideastern, southeastern coasts	All year
Striped Bass	Low	Whole, drawn, steaks, fillets	Mideastern, southeastern coasts	All year
Trout	Moderate to High	Drawn, dressed	Inland rivers and fish farms	All year
Turbot	Low	Fillets (frozen)	Imported	All year
Whiting	Low	Drawn, dressed, steaks, fillets	Northeastern, mideastern coasts	All year

*Very low: Less than 2 percent fat; Low: 2-5 percent fat; Moderate: 6-10 percent fat; High: More than 10 percent fat

Sunset Seafood Cook Book. Menlo Park, Cal.: Lane Publishing Co. 1977. 8-11.

SUPERMARKET SCAVENGER

Locate ten (10) species of seafood which are available in two of the three basic market forms (fresh, frozen, canned). Complete the following chart by placing a check mark (✓) under the headings of the available forms.

SPECIES	FRESH	FROZEN	CANNED
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

LESSON 4

CONCEPT:

Purchasing

OBJECTIVE:

Using "Amount to Purchase" and "Figuring Fish," state the amount of seafood to purchase with 95% accuracy.

Teacher Directions

25 minutes

Discuss relationship between market form and amount to purchase. (Example: Whole fish requires more per serving than fillet or chunks due to waste--bones, etc.)

Have students survey cookbooks for recipes requiring a variety of market forms - look for amount of fish used and number served.

(References: Seafood Products Lecture Guide, p. 39 and 73; Foundations of Food Preparation for Hotels, Restaurants and Cafeterias, p. 462.)

Have students select one type of finfish and one type of shellfish, and calculate the amount needed to purchase to serve all members of their family.

Have students complete "Figuring Fish." This may be done individually or in small groups.

Select the situations most appropriate to the ability and interest levels. Names should be changed to represent the cultural and ethnic population of your students.

EVALUATION: "Figuring Fish"

OBJECTIVE:

Given recipes, compute and compare the cost per serving of a seafood dish using at least two market forms of the same species as the main ingredient.

Teacher Directions

25 minutes

Discuss relationship between market form of fish and cost. (May relate to many types of foods - potatoes and potato chips, for example)

Have students compute and compare the cost per serving of fresh fish to frozen fish.

Have students compute the cost per serving of seafood dishes using the same species in a variety of ways.

Example:

Boiled shrimp - Shrimp salad

Crab meat - Stuffed crab

Steamed clams - Clam chowder

Salmon steaks - Salmon loaf

EVALUATION: Computed cost analysis of recipes

TOTAL SUGGESTED TIME: 50 minutes

SEAFOOD: AMOUNTS TO PURCHASE PER SERVING

Finfish

Whole or drawn	3/4 lb.
Dressed	1/2 lb.
Fillet or steak	1/3 lb.
Portions	1/3 lb.
Sticks	1/4 lb.
Canned	1/6 lb.

Shellfish

Hard-shelled crabs	
live	1-2 lbs. (3-12 crabs)
cooked meat	3-6 ozs.
Dungeness crabs	3/4-1 lb. (1/2-1 crab)
Lobster	
live	1 lb.
cooked meat	3-6 oz.
Oysters and clams	
in shell or shucked	6 each
Scallops	3-6 oz.
Shrimp	
headless	1/2 lb.
cooked meat	3-6 oz.

FIGURING FISH

Benjamin is planning to prepare lobster for three people. How many pounds of live lobster should he purchase? What foods could be served with the seafood to form a balanced meal?

Rod and Bob are planning to cook fish sticks for their lunch. How much should they prepare? Also, what could be served with the fish sticks to form a balanced meal including something from each food group?

Jackie's family makes a special effort to purchase and prepare oysters in the shell when they go to the coast. With four people in the family, how many oysters should they purchase for this meal?

Breaded fish portion sandwiches are quick and easy to prepare. How much should be purchased to serve three people? Five people? Suggest complementary foods which would also require minimum preparation.

The Wilsons are planning a cook-out for the weekend and in place of hamburgers or steaks, scallop shish kabobs are being served. They have invited four couples. How many pounds of scallops will be needed to serve ten adults? Suggest a menu that will include the scallop shish kabobs.

Shrimp is a favorite at Jimmy's house and his mom is planning that for dinner on Tuesday night. There are six members in his family. How much raw shrimp will be needed to serve the group? If they buy cooked, cleaned shrimp, how much should they purchase?

Joanne is planning a fish fry following the football game on Saturday afternoon. Her dad has plenty of rainbow trout in the freezer that he caught on several fishing trips. The fish has been cleaned and the head removed. To serve ten people, how much fish will Joanne need to prepare? What are other foods which complement fried trout on her menu?

Cleo uses canned salmon to prepare salmon cakes for her family. To save time later, she is going to make extras this time and freeze them until another meal. As a result, she needs to purchase enough canned salmon to serve 18 people. How many 16 ounce cans should Cleo include on her shopping list?

LESSON 5

CONCEPT:

Storage of Fish

OBJECTIVE:

Prepare fish for refrigerator and freezer storage and state length of time each method will safely preserve the fish.

Teacher Directions

10 minutes	Discuss importance of proper storage of seafood due to high perishability, and storage methods (refrigerate, freeze, dry, pickle, smoke).
	Discuss lengths of time seafood may be kept (fresh and frozen) for optimal quality.
	Demonstrate proper procedure for storing fish in: refrigerator, freezer.
10 minutes	Have students, working in groups, prepare seafood for storage (refrigerator, freezer, or both). This seafood may be used during food preparation.

EVALUATION: Properly stored seafood

CONCEPT:

Preparation of Seafood Dishes

OBJECTIVE:

Given recipe(s), prepare market order form and plan for lab work.

Teacher Directions

5 minutes	Discuss ways in which seafood may be used in meals, the method of preparation, and cooking times required.
20 minutes	Have students select recipes (teacher may provide), prepare market order and plan for lab experience. (Note: Recipes should require a short cooking time to allow for tasting on the preparation day.)

Have students turn in completed market order form by the end of the class period.

(Note: Teacher may encourage use of seafoods less often utilized or unfamiliar to students to increase value of learning experience.)

EVALUATION: Completed Market Order form.

TOTAL SUGGESTED TIME: 50 minutes

Class period _____ Date _____

Students' Names _____

Fish:	Grains:
Dairy Products:	Canned Foods:
Fresh Fruits and Vegetables:	Miscellaneous:

LESSON 6

CONCEPT:

Preparation of Seafood Dishes

OBJECTIVE:

Prepare seafood recipes utilizing correct cooking principles as judged by the instructor.

Teacher Directions

40 minutes — Have students prepare and serve seafood dishes.

EVALUATION: Completed Seafood Preparation Checklist.

OBJECTIVE:

Taste and evaluate seafood dishes prepared by other students using provided evaluation form.

Teacher Directions

10 minutes — Establish a taste panel by arranging all seafood dishes buffet-style, numbering each. Have each student designate dish number on their plate (may use paper plates) and evaluate according to provided form.

EVALUATION: Completed Taste Panel Evaluation.

TOTAL SUGGESTED TIME: 50 minutes

SEAFOOD PREPARATION CHECKLIST

ACTIVITY	Satis-factory	Unsatis-factory
1. Used the appropriate equipment.		
2. Used proper supplies and food items.		
3. Handled food in a sanitary manner.		
4. Used correct cooking temperature.		
5. Put away all supplies after they were used.		
6. Served food at correct temperatues.		
7. Served food attractively.		
8. Arranged food according to type of service.		
9. Shellfish prepared properly.		
10. Fish are moist, flake easily and have desired color.		
11. Cleaned equipment thoroughly.		

TASTE PANEL EVALUATION

ITEM NUMBER	RECIPE NAME	TYPE OF SEAFOOD PREPARED	METHOD OF PREPARATION	DESCRIBE TASTE: Delicate flavor Strong fish taste/odor Well-seasoned Salty or flat (choose one or more to describe the taste)	HOW DID YOU LIKE IT? 1-I will never eat it again! Yuk! 5-I loved it! Yum! (rate on scale of 1-5)
1					
2					
3					
4					
5					

SUPPLEMENTAL ACTIVITIES

LEVEL II

SUPPLEMENTAL ACTIVITIES

1. Discuss myths students may have heard concerning seafood. (Examples: Don't drink milk with fish, don't eat oysters in months that don't have an "r" in them.)

2. Plan an outdoor cooking laboratory with seafood.

3. Work with school lunch personnel to promote "Seafood Day." (Poster contest, bulletin board, school announcements)

4. The following is a list of games and individual activities which may be used to supplement classroom experience.

   Seafood Roulette
   Seafood Sweepstakes
   Seafood Scrabble
   Scrambled Statements
   Find the Fish
   Tricky Fish Maze

5. Using Dairy Council comparison cards as a resource, develop nutrient comparison cards featuring fish and seafood.

6. Draw a map of the United States and code in the seafood species listed on the Seafood Species Chart.

7. Plan a field trip or have a resource person come to the classroom.

SEAFOOD ROULETTE

Game Objective: To review students on the facts of seafood.

Number of Players: 3-6, 1 banker

Game Materials: A "Roulette Wheel" made from a kitchen storage turntable. Cover the turntable with a paper disc with seafood terms on it (see below).

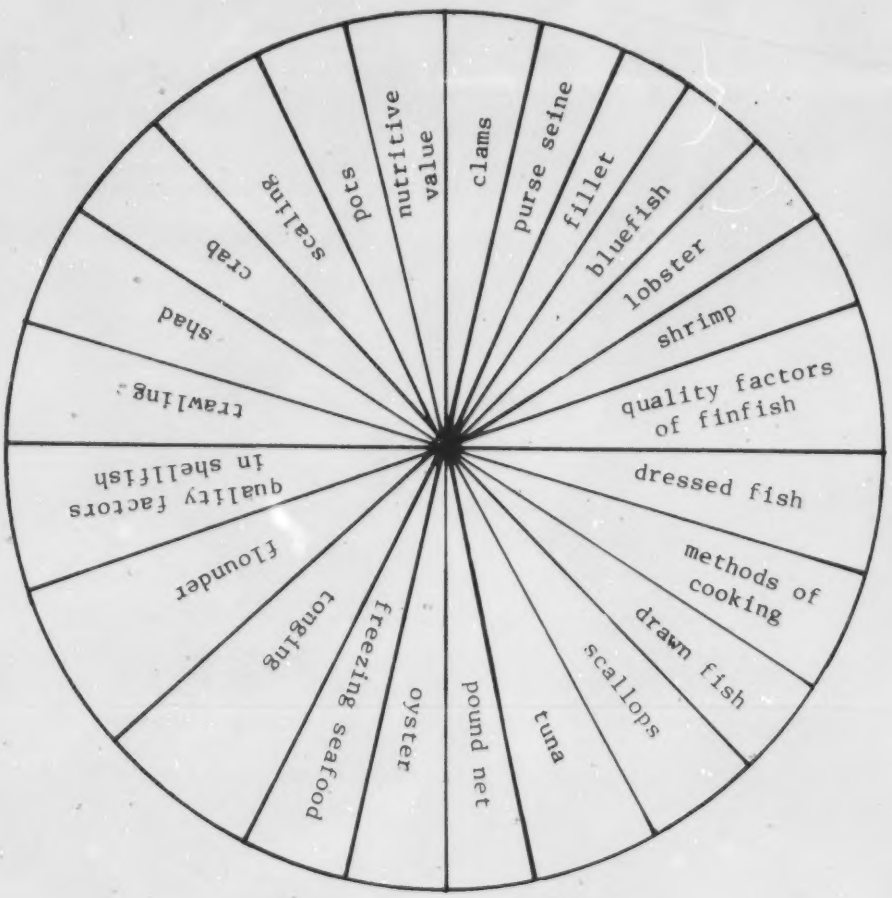
Player arrows - with tape, place an arrow on the playing table in front of each player.

Banker chips - any type of game chip is acceptable.

Information notebook for the banker to use to rule on answers.

How to Play: Place the wheel in the middle of the table. The banker spins the wheel. The first player on the banker's left gives a fact about the term that his arrow is pointing to when the wheel stops. If he gives a correct answer, he's given a chip; if he gives incorrect information, he loses a chip. At the end of a specified amount of time, the player with the most number of chips wins the game. The banker has to be sure the same piece of information is not repeated more than once.

(Adapted from: "Spice and Herb Roulette," Forecast, December 1975).



SEAFOOD SWEEPSTAKES

Directions: Divide class into two teams. Ask the answers to the definitions. Whoever locates the correct answer must give the position number and line number before the answer. The sum of the line number and the position is the amount that team receives if the answer is correct.

← POSITION NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
t	o	f	r	y	o	u	g	i	l	l	s	a	p	r	o	t	e	i	n	1
b	e	n	n	i	r	e	f	r	i	g	e	r	a	t	e	d	i	c	t	2
s	c	a	l	e	s	n	p	i	c	k	l	e	r	o	u	a	c	l	m	3
j	o	y	s	t	e	r	f	r	e	e	z	e	i	e	y	e	s	c	a	4
a	v	s	t	e	a	k	s	o	d	o	r	t	f	i	n	f	i	s	h	5
p	m	u	s	g	r	a	d	e	s	t	a	n	d	a	r	d	s	p	e	6
d	s	h	r	i	m	b	r	o	i	l	e	q	u	a	s	e	a	m	k	7
t	u	g	w	h	o	l	e	s	m	o	k	e	d	m	e	n	t	a	n	8
s	h	e	l	l	f	i	s	h	e	l	p	b	a	y	e	n	i	h	o	9
l	o	c	k	i	o	d	i	n	e	t	w	a	t	e	r	i	d	r	y	10

LINE NUMBER ↓

SEAFOOD SWEEPSTAKES DEFINITIONS

1. Two major categories for classifying fish.
2. Nutrient found in fish which promotes muscle growth and development.
3. Nutrient found in seafood which prevents goiters.
4. Market form of fish as it appears when taken from the water.
5. Market form of fish--cross section slices from large dressed fish.
6. Quality control factor and basis for official inspection.
7. Four characteristics to observe in determining quality of fish.
8. Most common method of preparing fish.
9. Method of food preparation using direct intense heat from a single source.
10. Two types of scallops. (see transparency)
11. Five seafood storage methods.

SEAFOOD SWEEPSTAKES KEY

1.	Finfish	14, 5
	Shellfish	1, 9
2.	Protein	14, 1
3.	Iodine	5, 10
4.	Whole	4, 8
5.	Steaks	3, 5
6.	U.S. Grade Standards	3, 6
7.	Gills	8, 1
	Odor	9, 5
	Scales	1, 3
	Eyes	15, 4
8.	Fry	3, 1
9.	Broil	7, 7
10.	Bay	13, 9
	Sea	16, 7
11.	Refrigerate	6, 2
	Freeze	8, 4
	Dry	18, 10
	Smoke	9, 8
	Pickle	8, 3

SEAFOOD SCRABBLE

Using a scrabble board, two to four students play Seafood Scrabble using words related to seafood. (See suggested word list - below)

Points are awarded for words formed, with double points given if the student provides a definition or information related to the word formed. A scorekeeper (non-player) should be appointed to act as judge for the answers given. The student with the highest number of points when all the letter tiles are gone is the winner.

Suggested word list

Crab	Fillet
Clam	Steak
Lobster	Dressed
Scallop	Drawn
Shrimp	Nutrition
Oyster	Bake
Shellfish	Broil
Finfish	Fry
Salmon	Steam
Tuna	Poach
Flounder	Protein
Cod	Iodine
Trout	Niacin
Haddock	Gills

SCRAMBLED STATEMENTS

Directions: Below are several statements about seafood. Unscramble the words to find a fish fact.

1. D E F A S O O S I H H G I N O E R T P I N A D W O L T A F.

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

2. S F H I R A E L D C S A S I F I E S A S F I I N F H

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

   R O I H S S E L L F H.

   _ _ _ _ _ _ _ _ _ _

3. L W E H O D N A L I F L E T E R A W T O T A R M K E

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

   S F M O R F O S H F I.

   _ _ _ _ _ _ _ _ _ _ _ _

4. S U A G E R D T A S D S A R D N D N A C I E T N I S O P N

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

   R M K S A E N D R T M I E E I H H G L Q I U T A Y A E S O F D O.

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

5. R F H E S I F H S L S U H D O E A H V T R G B H I E R C A L

   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

   S E Y E N A D D R E L L S G I.

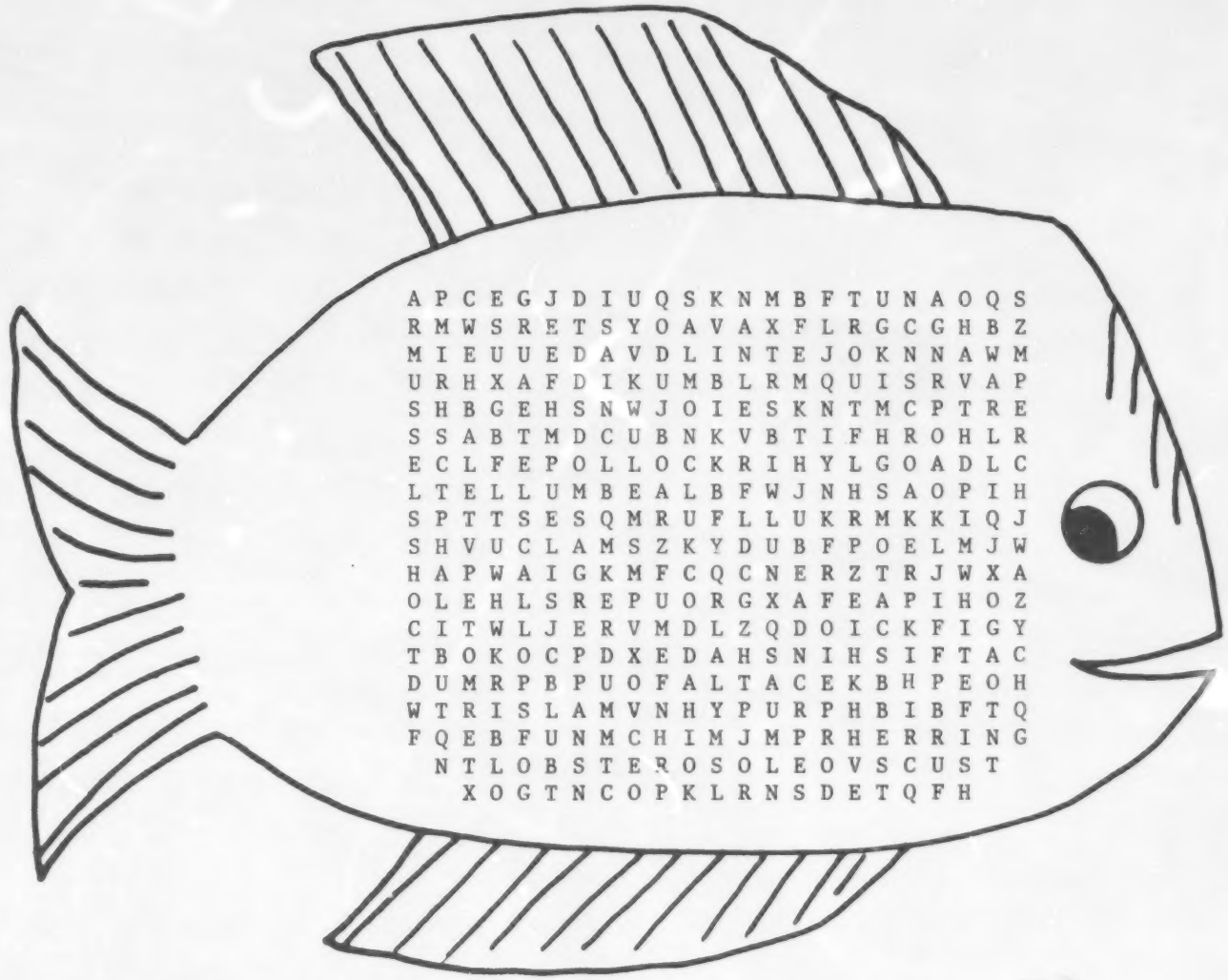
   _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

SCRAMBLED STATEMENTS - KEY

1. Seafood is high protein and low fat.
2. Fish are classified as finfish or shellfish.
3. Whole and fillet are two market forms of fish.
4. U.S. grade standards and inspection marks determine high quality seafood.
5. Fresh fish should have bright, clear eyes and red gills.

FIND THE FISH

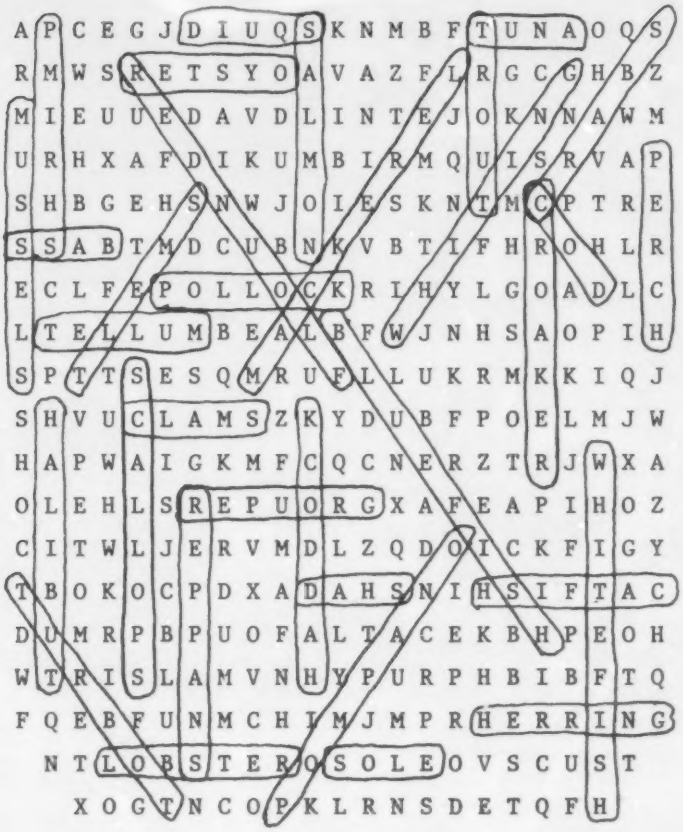
In this puzzle are hidden thirty-three different names of finfish and shellfish. They have been spelled backwards and forwards...in vertical, horizontal or diagonal directions.


A P C E G J D I U Q S K N M B F T U N A O Q S
R M W S R E T S Y O A V A X F L R G C G H B Z
M I E U U E D A V D L I N T E J O K N N A W M
U R H X A F D I K U M B L R M Q U I S R V A P
S H B G E H S N W J O I E S K N T M C P T R E
S S A B T M D C U B N K V B T I F H R O H L R
E C L F E P O L L O C K R I H Y L G O A D L C
L T E L L U M B E A L B F W J N H S A O P I H
S P T T S E S Q M R U F L L U K R M K K I Q J
S H V U C L A M S Z K Y D U B F P O E L M J W
H A P W A I G K M F C Q C N E R Z T R J W X A
O L E H L S R E P U O R G X A F E A P I H O Z
C I T W L J E R V M D L Z Q D O I C K F I G Y
T B O K O C P D X E D A H S N I H S I F T A C
D U M R P B P U O F A L T A C E K B H P E O H
W T R I S L A M V N H Y P U R P H B I B F T Q
F Q E B F U N M C H I M J M P R H E R R I N G
N T L O B S T E R O S O L E O V S C U S T
X O G T N C O P K L R N S D E T Q F H

Here are the 33 seafood names hidden in the puzzle:

Bass	Haddock	Pollock	Squid
Bluefish	Halibut	Pompano	Trout
Catfish	Herring	Salmon	Tuna
Clams	Lobster	Scallops	Turbot
Cod	Mackerel	Shad	Whitefish
Crabs	Mullet	Shrimp	Whiting
Croaker	Mussels	Smelt	
Flounder	Oysters	Snapper	
Grouper	Perch	Sole	

FIND THE FISH WORD SEARCH - KEY


A P C E G J D I U Q S K N M B F T U N A O Q S
R M W S R E T S Y O A V A Z F L R G C G H B Z
M I E U U E D A V D L I N T E J O K N N A W M
U R H X A F D I K U M B I R M Q U I S R V A P
S H B G E H S N W J O I E S K N T M C P T R E
S S A B T M D C U B N K V B T I F H R O H L R
E C L F E P O L L O C K R L H Y L G O A D L C
L T E L L U M B E A L B F W J N H S A O P I H
S P T T S E S Q M R U F L L U K R M K K I Q J
S H V U C L A M S Z K Y D U B F P O E L M J W
H A P W A I G K M F C Q C N E R Z T R J W X A
O L E H L S R E P U O R G X A F E A P I H O Z
C I T W L J E R V M D L Z Q D O I C K F I G Y
T B O K O C P D X A D A H S N I H S I F T A C
D U M R P B P U O F A L T A C E K B H P E O H
W T R I S L A M V N H Y P U R P H B I B F T Q
F Q E B F U N M C H I M J M P R H E R R I N G
N T L O B S T E R O S O L E O V S C U S T
X O G T N C O P K L R N S D E T Q F H

THE TRICKY FISH MAZE

LEVEL III

Seafood is a nutritious and easy to prepare food source which lends itself to many methods of preparation. There many species of finfish and shellfish available in fresh, frozen and pre-prepared market forms. Seafood is a tender, easily digested source of protein which requires a short cooking time and lends itself to use in therapeutic diets.

Level III is an advanced foods unit, in which the student will prepare seafood using several appliances, a variety of cooking techniques and a number of different preparation methods. The student will plan for the use of seafood in a variety of menus and work with different budget amounts. The activities have been planned for students that have a thorough foods background. Some of the material may be utilized as homework assignments. Lesson 8 is a planned field trip to a seafood market or grocery store that may be taken by the total class or on an individual basis.

LEVEL III

CONCEPTS:

Finfish and Shellfish
Nutrition - Therapeutic Diets
Characteristics of Good Quality
Cleaning and Filleting a Finfish
Sanitation
Storage
Cleaning Shellfish
Seafood Available Locally
Market Forms
Processing
Cost Analysis
Consumer Information
Advanced Preparation of Seafood

GENERALIZATIONS:

Seafood may be categorized into two major divisions - finfish and shellfish.
Seafood has a high protein content and is relatively low in fat and calories.
Physical characteristics may be used to determine good quality of seafood.
Prior to cooking, fish must be eviscerated and cleaned.
Good practices of sanitation must be used when working with seafood.
Proper storage of seafood is necessary to maintain quality and maximum nutritional value.
Prior to consumption, shellfish must be cleaned.
Availability of seafood depends upon geographic area and season.
Seafood may be purchased in a variety of market forms requiring a varying amount of preparation.
Seafood may be processed several ways.
Cost analysis indicates cost-per-serving of a given item.
Consumer information is an important concept for the homemaker.
Seafood may be prepared in a variety of ways for versatile meal planning.

OBJECTIVES:

Upon completion of this level, the student will:

1. Given a word search puzzle, identify level of present knowledge pertaining to fish and seafood.

2. Orally or in writing, identify at least three nutrients and their functions with 100% accuracy.

3. Using information from class discussion, plan a therapeutic diet for each of the groups discussed, using seafood as the protein item. Planned menus must meet the dietary requirements.

4. Given two pictures, one of a fresh fish and one of a fish that is not fresh, orally or in written form identify the four characteristics of good quality finfish.

5. Given a fresh finfish and appropriate equipment, clean, fillet and store finfish. All items must receive a satisfactory rating on the checklist.

6. Given fresh shellfish and appropriate equipment, clean and store shellfish. All items must receive a satisfactory rating on the checklist.

7. Using newspaper advertisements and/or store visit, identify seafood available locally, market forms of finfish and shellfish, and the cost of various species. All items on the checklist should be completed correctly.

8. Orally identify proper storage and processing methods for fresh finfish and shellfish.

9. Given a menu problem and the necessary instructions, develop a menu which meets the needs of that particular family. Each menu should use seafood as the protein source. A checklist will be used, and all items must receive a satisfactory rating.

10. Given specific instructions, simulate a consumer test kitchen to judge various techniques, preparation methods, appliances and costs of seafood items. A checklist will be used to judge each area.

11. Given menu plan, recipes, supplies and equipment, properly prepare seafood dishes, with appropriate garnish. A seafood preparation checklist should be completed after all dishes are prepared.

12. Given prepared seafood dishes, taste and evaluate according to lab evaluation form.

13. Given the field trip evaluation form, identify seafood and market forms of fish and shellfish available locally, storage and processing techniques used, and cost of various market forms of species available. Incorporate all information into a written essay.

EVALUATIONS:

Completed Word Search
Oral or written identification of three nutrients and their function(s)
Planned menus
Identification of four characterstics of good quality finfish
Completed Finfish Checklist
Completed Shellfish Checklist

EVALUATIONS (con't):

Completed Seafood Availability Checklist
Oral identification of proper storage and processing methods
Completed Menu Planning Checklist
Completed Consumer Information Checklist
Completed Seafood Preparation Checklist
Completed Seafood Lab Evaluation
Essay on Field Trip

Casting Ahead

Review Bibliography and select references appropriate for your use.

Review Supplemental Activities which follow the daily lesson plans for Level III.

Contact a resource person to do the demonstration in Lessons 1 and 2 if you do not wish to do them yourself.

Lessons are planned for a 50-minute time period. If class is a two-hour block, lessons can be combined.

Secure proper equipment for working with finfish and shellfish (fillet knife, crab knife, oyster knife, and clam knife).

The word search should be duplicated and transparency made (Lesson 1). (Reproduce the key for the word search if desired).

Purchase needed finfish. In addition, secure examples of a real fresh fish and a fish that is not fresh (Lesson 2).

Duplicate Finfish Checklist (Lesson 2).

Purchase needed shellfish (Lesson 3).

Duplicate Shellfish Checklist (Lesson 3).

Duplicate Seafood Availability Checklist (Lesson 4).

Duplicate Worksheet and Menu Planning Checklist (Lesson 5).

Transfer menu problems to 3 x 5 cards to be distributed to groups (Lesson 5).

Transfer test kitchen data to 3 x 5 cards to be distributed to groups (Lesson 6).

Duplicate Consumer Information Checklist (Lesson 6).

Duplicate Seafood Preparation Checklist and Seafood Lab Evaluation.

Plan for a field trip to a seafood market.

LESSON 1

CONCEPTS:

Finfish and Shellfish
Nutrition - Therapeutic Diets

OBJECTIVE:

Given a word search puzzle, identify level of present knowledge pertaining to fish and seafood.

Teacher Directions

5 minutes — Enter class dressed as a fisherman - with a fishing pole.

Discuss:
How many go fishing? Where? What is caught?
What do you do with what you catch?
What are finfish? Shellfish?
What are the different ways fish may be prepared?
What are the market forms?

15 minutes — Give the Word Search Puzzle to each student to determine level of understanding of seafood and nutrition.

Have students exchange pre-tests and correct, using key obtained from teacher. (Key could be on a transparency.)

EVALUATION: Completed Word Search

OBJECTIVE:

Orally or in writing, identify at least three nutrients and their function(s) with 100% accuracy.

Teacher Directions

10 minutes — Review items 2, 7, 10, 12, 15, 17, 19, and 21 from the Word Search. These pertain to food groups, protein, carbohydrates, fat, vitamins and minerals, and the deficiencies caused by inadequate amounts of each.

EVALUATION: Oral or written identification of three nutrients and their function(s).

OBJECTIVE:

Using information from class discussion, plan a therapeutic diet for each of the groups discussed, using seafood as the protein item. Planned menus must meet the dietary requirements.

Teacher Directions

30 minutes	Discuss the value of seafood in therapeutic diets: low fat, low cholesterol, diabetic, reducing and geriatric.
	Have students (in groups of four or five) plan a menu for each diet using seafood as the protein source.
	Have class evaluate the menus for nutritional content.

EVALUATION: Planned menus

TOTAL SUGGESTED TIME: 50 minutes

WORD SEARCH

W P R O T E I N C I K S U L L O M
T D S A L T W A T E R F P N O Y S
R G S T E A K L O B S I R I O D T
O A A S R H L T S H E L L F I S H
R K L D W U O M N D O L D J L M G
R I M T U P S I B A K E A I V M N
E N O U B V C T R O U T A C C P I
T U N A R A E U W I G N G H O O K
A F R V I N C R D S S W H A Y E I
W C I N L L I T B H E T C D S G S
E N I L A C A L O R I H R E T D W
D G I B D R A E M I O D I N E E I
I G H A D D O C K M H I O M R R P
T A R A I V A C M P M A L C T D W

SHRIMP
DREDGE
CRABPOT
GILLNET
LINE
HOOK
TIDEWATER
HADDOCK
TUNA
SNAILS
TURTLE
MOLLUSK
SHELLFISH
OYSTER
PROTEIN
NIACIN
FIN
TROUT
DRAWN
STEAK
SALMON
BAKE
FILLET
CAVIAR
POACH
BROIL
IODINE
SALTWATER
KING
CLAM

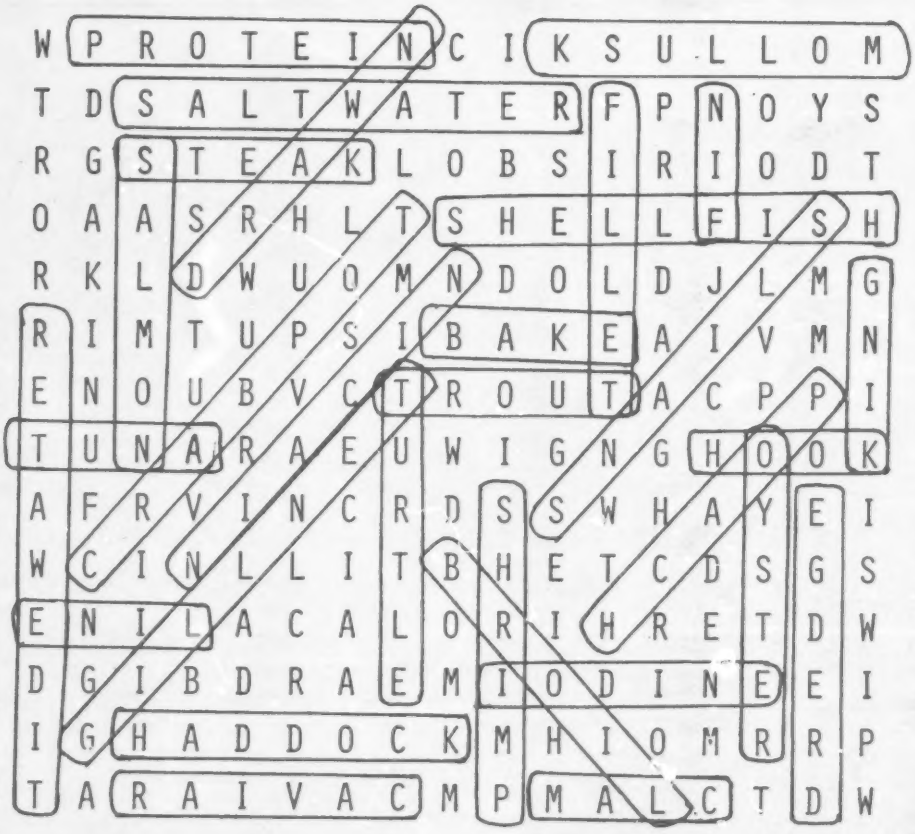
WORD SEARCH CLUES

1. Seafood having fins, scales and gills.
2. Highly concentrated form of energy.
3. A shellfish found along the coast of Maine.
4. A market form of fresh fish when entrails are removed.
5. The coastal area where salt water and fresh water meet.
6. Shellfish which have a hard shell and no limbs.
7. Essential nutrient used for building body tissues.
8. Small crustacean which turns pink when cooked.
9. A boneless piece of fish.
10. Type of therapeutic diet which limits animal fats.
11. Food source of heat and energy.
12. Shellfish which have hard exoskeletons and jointed limbs.
13. Four characteristics which should be observed to determine quality of fish.
14. A mineral which prevents goiter.
15. A bivalved mollusk of which only the adductor muscle is consumed.
16. Unit used to express food energy.
17. A flat saltwater fish.
18. Essential nutritional components that are found in small quantities of foods.
19. A lobster with one claw missing.
20. Inorganic elements found in trace quantities in food.
21. Long-term storage method most commonly used for fish.
22. The most common method of preparing fish.

WORD SEARCH CLUES - KEY

1. Seafocd having fins, scales and gills. (FINFISH)
2. Highly concentrated form of food energy. (CARBOHYDRATE)
3. A shellfish found along the coast of Maine. (LOBSTER)
4. A market form of fresh fish when entrails are removed. (DRAWN)
5. The coastal area where salt water and fresh water meet. (TIDEWATER)
6. Shellfish which have a hard shell and no limbs. (MOLLUSK)
7. Essential nutrient used for building body tissue. (PROTEIN)
8. Small crustacean which turns pink when cooked. SHRIMP)
9. A boneless piece of fish. (FILLET)
10. Type of therapeutic diet which limits animal fats. (LOW CHOLESTEROL)
11. Food source of heat and energy. (FAT)
12. Shellfish which have hard exoskeletons and jointed limbs. (CRUSTACEAN)
13. Four characteristics which should be observed to determine quality of fish. (ODOR, EYES, GILL, SCALES)
14. A mineral which prevents goiter. (IODINE)
15. A bivalved mollusk of which only the adductor muscle is consumed. (SCALLOP)
16. Unit used to express food energy. (CALORIE)
17. A flat saltwater fish. (FLOUNDER)
18. Essential nutritional components that are found in small quantities of foods. (VITAMIN)
19. A lobster with one claw missing. (PISTOL)
20. Inorganic elements found in trace quantities in food. (MINERALS)
21. Long-term storage method most commonly used for fish. (FREEZING)
22. The most common method of preparing fish. (FRYING)

WORD SEARCH KEY


W P R O T E I N C I K S U L L O M
T D S A L T W A T E R F P N O Y S
R G S T E A K L O B S I R I O D T
O A A S R H L T S H E L L F I S H
R K L D W U O M N D O L D J L M G
R I M T U P S I B A K E A I V M N
E N O U B V C T R O U T A C P P I
T U N A R A E U W I G N G H O O K
A F R V I N C R D S S W H A Y E I
W C I N L L I T B H E T C D S G S
E N I L A C A L O R I H R E T D W
D G I B D R A E M I O D I N E E I
I G H A D D O C K M H I O M R R P
T A R A I V A C M P M A L C T D W

LESSON 2

CONCEPTS:

Characteristics of Good Quality
Cleaning and Filleting a Finfish
Sanitation
Storage

OBJECTIVE:

Given two pictures, one of a fresh fish and one of a fish that is not fresh, orally or in written form identify the four characteristics of good quality finfish.

Teacher Directions

5 minutes — If possible, secure an example of a fresh fish and a fish that is not fresh. Discuss characteristics of each. Stress characteristics denoting good quality.

EVALUATION: Identification of four characteristics of good quality.

OBJECTIVE:

Given a fresh finfish and appropriate equipment, clean, fillet and store finfish. All items must receive a satisfactory rating on the checklist.

Teacher Directions

45 minutes — Identify and explain the equipment to be used.

Demonstrate scaling, skinning, gilling, eviscerating and filleting a finfish. (Purchase the species you will use for lab preparation in Lesson 6.)

Discuss and demonstrate proper storage and sanitation to be used during procedure: a) if it is to be used within two days; b) if it is to be held for longer periods. (References: Seafood Lecture Guide, p. 85-94; Experience with Foods, p. 218-221; Foundations of Food Preparation, p. 298-303.)

Have students practice scaling, skinning, gilling, eviscerating and filleting a finfish.

Have students follow proper sanitation procedures.

Have students wrap and store finfish according to proper procedures for later laboratory use.

EVALUATION: Completed Finfish Checklist

TOTAL SUGGESTED TIME: 50 minutes

FINFISH CHECKLIST

ACTIVITY	Satis-factory	Unsatis-factory
1. Identified equipment to be used: a. Scaling knife or alternate b. Fillet knife or alternate		
2. Gilled and gutted finfish: a. Cut into area under chin b. Cut belly cavity back to vent fin c. Avoided cutting intestinal tract d. Removed any visible fat e. Removed kidneys and abdominal lining under running water		
3. Scaled and removed fins: a. Used scraping motion from tail to head b. Removed fins by cutting 3/4" along each side c. Pulled fin away, from tail toward head		
4. Skinned fish: a. Cut skin, not flesh, along top of fish and around fins b. Peeled skin away with pliers or fingers		
5. Filleted fish: a. Cut into flesh back of head at 45° angle to backbone b. Turned knife and followed backbone to tail c. Removed rib bones if necessary d. Cut fillet away from tail		
6. Practiced good sanitation techniques throughout procedure.		
7. Prepared fish correctly for storage according to directions given.		

LESSON 3

CONCEPT:

Cleaning Shellfish
Sanitation
Storage

OBJECTIVE:

Given fresh shellfish and appropriate equipment, clean and store shellfish. All items must receive a satisfactory rating on the checklist.

Teacher Directions

50 minutes

Identify and explain the equipment used to shuck clams and oysters and devein shrimp.

Demonstrate shucking clams and oysters, and cleaning and deveining fresh as well as cooked shrimp.

Discuss and demonstrate proper storage and sanitation to be used during procedure. (References: Seafood Lecture Guide, p. 39-40; Experience with Foods, p. 218-221; Foundations of Food Preparation, p. 298-303.)

Have students practice shucking clams and oysters and deveining shrimp.

Have students follow proper sanitation procedures.

Have students store shellfish according to proper procedures for later laboratory use.

EVALUATION: Completed Shellfish Checklist

TOTAL SUGGESTED TIME: 50 minutes

SHELLFISH CHECKLIST

ACTIVITY	Satis-factory	Unsatis-factory
1. Shucked clam(s) a. Washed thoroughly, removed broken or dead ones b. Held clam in palm with hinge against palm c. Inserted clam knife between halves of shell and cut around, twisting to open d. Cut muscle free from shell		
2. Shucked oyster(s) a. Washed thoroughly, removed broken or dead ones b. Billed the edges of the shell with a hammer c. Inserted clam knife between halves of shell and cut around, twisting to open d. Cut muscle free from shell		
3. Deveined shrimp a. Removed shell (and tail if so instructed) b. Inserted knife at back and cut down toward tail c. Removed dark vein without waste		
4. Practiced good sanitation techniques throughout procedure.		
5. Prepared seafood correctly for storage according to directions.		

LESSON 4

CONCEPTS:

Seafood Available Locally
Market Forms of Finfish and Shellfish
Processing
Cost Analysis

OBJECTIVE:

Using newspaper advertisements and/or store visit, identify seafood available locally, market forms of finfish and shellfish, and the cost of various species. All items on the checklist should be completed correctly.

Teacher Directions

30-35 minutes Divide the class into groups to search newspaper ads and/or visit local seafood markets, grocery stores.

Give each group the checklist of items to include in the survey.

Discuss and compare findings.

EVALUATION: Completed Seafood Availability Checklist

OBJECTIVE:

Orally identify proper storage and processing methods for fresh finfish and shellfish.

Teacher Directions

15 minutes Review storage procedures with class (Lessons 2 and 3).

Discuss methods of processing finfish and shellfish for consumer use: canning, chilling, freezing, smoking, pickling, etc.

EVALUATION: Oral identification of proper storage and processing methods.

TOTAL SUGGESTED TIME: 50 minutes

SEAFOOD AVAILABILITY/MARKET FORMS/COST CHECKLIST

Seafood List	Available Locally	Market Forms (fresh, frozen, canned, etc.)	Unit Cost (per pound)	Source: Store name
Anchovies				
Bass				
Carp				
Caviar				
Catfish				
Clams				
Cod				
Crabs				
Flounder				
Frog's Legs				
Haddock				
Halibut				
Herring				
Lobster				
Mackerel				
Oysters				
Perch				
Salmon				
Sardines				
Shad				
Shark				
Shrimp				
Snails				
Squid				
Trout				
Tuna				
Turtle				

ORAL QUESTIONS

1. What is the most important fact to remember when processing fresh seafood? (It is extremely perishable.)

2. What steps must be taken to insure quality of fresh seafood before it is preserved? (Keep it clean, keep it cold, eviscerate as soon as possible, package for storage immediately.)

3. How should fresh finfish be processed before freezing? (Scale and remove head and entrails, wash thoroughly under running water, remove excess moisture, package for freezing- remove air and seal airtight; freeze at or below 0°F/-18°C.)

4. How should fresh shellfish be processed for freezing? (Eliminate all inedible materials and debris, wrap in air-tight plastic wrap, mark, date and freeze at or below 0°F/-18°C.)

5. How does one process fresh seafood for short-term storage (one or two days)? (Clean thoroughly, package to keep out air, store in coldest part of refrigerator until use. Do not allow to stand at room temperature.)

6. What situations would require that you know this information? (Camping, deep-sea fishing, seafood sale at local store, etc.)

LESSON 5

CONCEPT:

Cost and Time Analysis

OBJECTIVE:

Given a menu problem and the necessary instructions, develop a menu which meets the needs of that particular family. Each menu should use seafood as the protein source. A checklist will be used and all items must receive a satisfactory rating.

Teacher Directions

10 minutes — Review or discuss basic menu planning techniques: balance, color, texture, preparation methods, garnishing. You may also wish to review therapeutic diets from Lesson 1.

40 minutes — Divide the class into groups and assign each group a specific menu to plan, which will use seafood as the protein portion.

a. Low fat/low cholesterol dinner for two at $1 per person, which can be be prepared by two people in one hour.

b. A 700-calorie reducing dinner for three at $1 per person, which can be prepared by one person in 45 minutes.

c. A geriatric dinner at 75 cents per person, which can be prepared by one person in 45 minutes.

d. An informal Sunday brunch for 6 people at $2 per person, which can be prepared by three people in 45 minutes.

e. A special formal dinner to entertain the boss (and four others) at $3 per person that can be prepared by three people in 90 minutes.

Have students write menus and compute costs (a worksheet is provided).

Check preparation time.

Have groups discuss final menus with entire class.

EVALUATION: Completed Menu Planning Checklist

TOTAL SUGGESTED TIME: 50 minutes

COST AND TIME ANALYSIS WORKSHEET

Activity: Group: Menu Item:

Ingredients and Amount	Recipe Reference	Preparation Time	Preparation Method	Cost per Item

TOTAL: _____

MENU PLANNING CHECKLIST

ACTIVITY	Satis-factory	Unsatis-factory
1. Selected foods to include each area of the Basic 4 food groups.		
2. Selected menu offerings according to basic menu planning techniques: a. balance b. color c. texture d. preparation methods e. garnishes		
3. Selected menu offerings according to the specific assignment given.		
4. Based menu plan on the specific amount of money to be used per person.		
5. Planned preparation method to be used for specific assignment (if applicable).		
6. Planned menu which could be prepared in time available.		
7. Considered equipment available for preparation.		
8. Wrote menu according to proper form.		

LESSON 6

CONCEPTS:

Consumer Information
Advanced Preparation of Seafood

OBJECTIVE:

Given specific instructions, simulate a consumer test kitchen to judge various techniques, preparation methods, appliances and costs of seafood items. A checklist will be used to judge each area.

Teacher Directions

50 minutes

Discuss the concept of a consumer test kitchen with class and explain what each kitchen will do.

Divide class into groups and assign each group a specific test:

a. Use of small appliances in seafood preparation (ex.: toaster oven, wok, microwave oven, electric fry pan, electric grill, etc.)

b. Use of various preparation methods on a specific seafood (ex.: flounder): pan fry, bake, broil, poach.

c. Use of frozen seafood as compared to to seafood that has been thawed (broiled flounder, breaded and deep-fried oysters, steamed shrimp).

d. Use of 1/2 pound of shrimp to prepare a main dish for two, four and six people.

Have each group complete the checklist and report results to the rest of the class.

Generate class discussion of the activities with the following questions:

1. In the preparation of seafood, which appliance is best to use for:
   Energy conservation?
   Time conservation?
   Appearance?
   Weight loss per serving?

2. In comparing frozen versus thawed seafood, which was easiest to handle? Had the best appearance? Texture? Flavor? Least weight loss?

3. Which techniques used offers the most value for money spent?

4. How did the shrimp dishes compare for appearance, flavor, texture, cost?

5. How did the various techniques used affect the odor of the seafood prepared?

EVALUATION: Completed Consumer Information Checklist

TOTAL SUGGESTED TIME: 50 minutes

CONSUMER INFORMATION CHECKLIST

Equipment, Method, Species, Recipe Used	Raw Weight (Frozen or Thawed)	Cooked Weight	Flavor Delicate/Strong Fresh/Stale Salty/Flat Well-seasoned	Texture Flaky/Tender Solid/Hard Compact/Tough Crumbly	Appearance Golden/Pale/Burned Crisp/Dry/Soggy Moist/Dry/Crumbly	Preparation Method and Preparation Time	Results Satisfactory or Unsatisfactory

LESSON 7

CONCEPT:

Advanced Preparation of Seafood

OBJECTIVE:

Given menu plan, recipes, supplies and equipment, properly prepare seafood dishes, with appropriate garnish. A seafood preparation checklist should be completed after all dishes are prepared.

Teacher Directions

40 minutes — Have students prepare in the lab the seafood dishes from the menu in Lesson 5.

OR

Have students prepare items for a seafood buffet. Note: Use finfish and shellfish stored in Lessons 2 and 3.

EVALUATION: Seafood Preparation Checklist

OBJECTIVE:

Given prepared seafood dishes, taste and evaluate according to the lab evaluation form.

Teacher Directions

10 minutes — Have students taste each item and evaluate according to evaluation form.

EVALUATION: Completed Seafood Lab Evaluation

TOTAL SUGGESTED TIME: 50 minute

SEAFOOD PREPARATION CHECKLIST

ACTIVITY	Satis-factory	Unsatis-factory
1. Used the appropriate equipment.		
2. Used proper supplies and food items.		
3. Handled food in a sanitary manner.		
4. Used correct cooking temperature.		
5. Put away all supplies after they were used.		
6. Served food at correct temperatures.		
7. Served food attractively.		
8. Arranged food according to type of service.		
9. Shellfish prepared properly.		
10. Fish are moist, flake easily and have desired color.		
11. Cleaned equipment thoroughly.		

SEAFOOD LAB EVALUATION

RECIPE NAME	TYPE OF SEAFOOD PREPARED	METHOD OF PREPARATION	DESCRIBE TASTE: Delicate flavor, Strong fish taste/odor, Well-seasoned, Salty or flat (choose one or more which describes the taste)	HOW DO YOU LIKE IT? 1-I will never eat it again! Yuk! 5-I loved it! Yum! (rate on scale of 1-5)
Group 1				
Group 2				
Group 3				
Group 4				
Group 5				

LESSON 8 (optional)

CONCEPTS:

Seafood Available Locally
Market Forms of Finfish and Shellfish
Storage
Processing
Cost Analysis

OBJECTIVE:

Given the Field Trip evaluation form, identify seafood and market forms of fish and shellfish available locally, storage and processing techniques used, and cost of various market forms of species available. Incorporate all information into a written essay.

Teacher Directions

50 minutes — Take a field trip to a local seafood market.

Discuss the Field Trip evaluation form with students.

EVALUATION: Essay on Field Trip.

TOTAL SUGGESTED TIME: 50 minutes

FIELD TRIP EVALUATION

Name _____ Date _____

Class or Grade _____

Name of store or market visited _____

In essay form, answer the following questions. You may add other information which you collect.

1. Where is the seafood purchased?

2. What forms are purchased?

3. Name some species of finfish and shellfish sold.

4. What percentage or amount of the seafood is sold wholesale? Retail?

5. What questions are asked by consumers about preparation of seafood?

6. List cost per pound of several items sold.

7. What precautions are taken to insure good quality and food sanitation?

8. Is the business inspected? By whom?

9. How many persons are employed? What tasks do they perform?

SUPPLEMENTAL ACTIVITIES

SUPPLEMENTAL ACTIVITIES

Optional Activities for Lesson 6

1. Have each group prepare a report of their test kitchen for possible newspaper article, presentation to other classes, to Parent-Teacher Association, etc.

2. Students may role-play positions of food marketing executives and evaluate products and procedures. Discuss advantages and disadvantages of each procedure and product, select one for a new business venture. Consider:

   preservation
   packaging
   labeling
   marketing
   cost

The following is a list of games and individual activities which may be used to supplement classroom experiences.

Captain's Match
Terry Tuna
Seafood Riddles

CAPTAIN'S MATCH (Based on the television show "Match Game")

Directions:

Divide students into teams of seven. Two students will be contestants, one will be the M.C. and four will be the panelists. Depending on the size of the class, the number of panelists could be expanded to six.

Questions are written out on cards and labeled "A" or "B". Each contestant chooses a question. The M.C. reads the question to the group. Each panelist writes an answer to the question on a card before the contestant verbally gives an answer.

Both contestants answer a question to see how many of the panelists they can match. The contestant who matches the most answers becomes the M.C., the M.C. becomes a panelist, and a panelist becomes a contestant. Use a notation system so all have a chance in each area.

Sample questions are included, but a good enrichment activity would be to have each student write out a question and answer before forming teams. Expand sample questions as needed.

Sample questions: (Expand as needed)

1. Charlie Tuna said: The mineral found in fish which prevents goiter is ____. (Iodine)

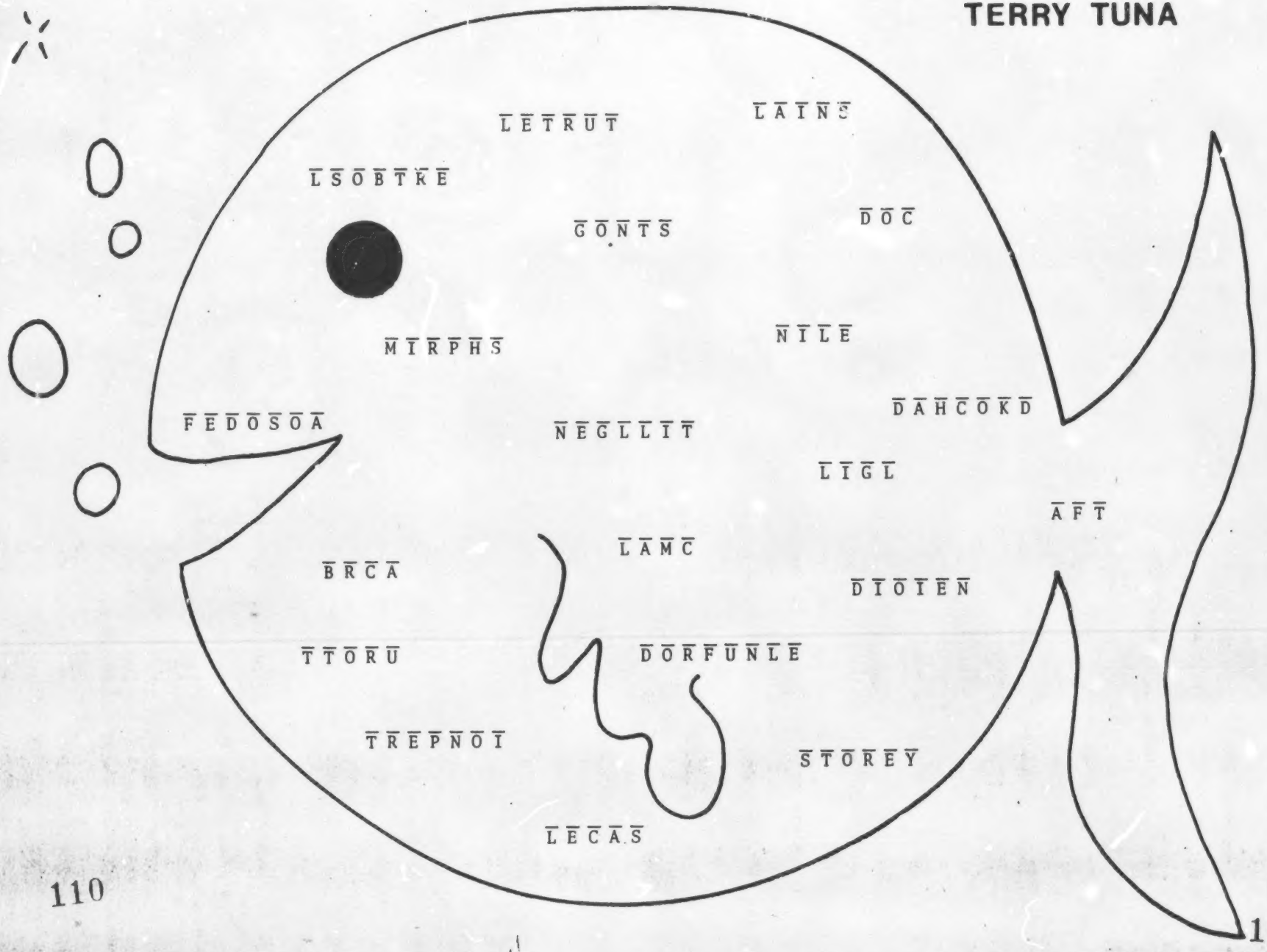
2. The dietitian says that fish is especially useful in ____ diets. (Low fat, low cholesterol)

3. One of the characteristics of good quality is ____. (Clear eyes; bright red gills; bright, tight scales; fresh odor)

4. Cutting a boneless piece of flesh from a fish is called ____. (Filleting)

5. A live lobster with one claw missing is called a ____. (Pistol)

TERRY TUNA



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111

TERRY TUNA - KEY

FEDOSOA	Seafood
MIRPHS	Shrimp
LSOBTRE	Lobster
BRAC	Crab
TTORU	Trout
TREPNOI	Protein
AFT	Fat
DIOIEN	Iodine
DOC	Cod
DORFUNLE	Flounder
LAMC	Clam
NEGLLIT	Gillnet
GONTS	Tongs
NILE	Line
LETRUT	Turtle
LAINS	Snail
DAHCOKD	Haddock
STOREY	Oyster
LIGL	Gill
LECAS	Scale

SEAFOOD RIDDLES

On 3 x 5 cards, type the following clues. Have two students act out the clues on each card, while the other students identify the item. Give clues one at a time.

1. I am a broad-bodied crustacean.
   I have four pairs of legs.
   I am a giant in the Pacific Ocean.
   My best name is Blue.
   (Crab)

2. I have two claws; one for crushing, one for eating.
   I am a primary product of Maine.
   When cooked I turn red.
   I am very expensive.
   (Lobster)

3. I have stalked eyes.
   I have a hinged exoskeleton.
   I am found in large numbers in Georgia.
   I turn pink when cooked.
   (Shrimp)

4. I am a cold-blooded animal.
   I live in the water.
   I breathe through my gills.
   I am one of man's earliest forms of food.
   (Fish)

5. I am a market form of finfish.
   I have no bones.
   I broil quickly.
   I can be made from a flat or round fish.
   (Fillet)

6. I am high in digestible protein.
   I am low in fat.
   I contain many vitamins and minerals.
   I am an excellent choice for special diets.
   (Seafood)

7. I am a form of live lobster.
   I weigh about one pound.
   In some restaurants I can be chosen from a tank.
   I am probably the most used form of live lobster.
   (Chicken Lobster)

8. I am a form of crustacean.
I have a globular body.
I have eight arms.
I am not eaten as food in the U.S.
(Octopus)

9. I am a mollusk.
I have one special shell.
I am considered a delicacy by some.
I am on menus as "Escargot."
(Snail)

10. I am a bivalve mollusk.
I am produced commercially by sea farming.
I am often sold in restaurants "on the half shell."
I am less plentiful in the summer months.
(Oyster)

11. I am a large saltwater fish.
I am sold in cans and as steaks.
I am used for sandwiches and salads.
I want to belong to Starkist.
(Tuna)

12. I am a flat saltwater fish.
Both eyes are on top of my body.
I am often stuffed with crabmeat.
I am an easy fish to fillet.
(Flounder)

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REFERENCES

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Watt, Bernice K. and Annabel L. Merrill. Composition of Foods: Raw, Processed, Prepared. Consumer and Food Economics Institute, Agricultural Research Service, U.S. Department of Agriculture Reprint. 1975.

FREE FILM BIBLIOGRAPHY

Association Films, Inc.
600 Grand Avenue
Ridgefield, NJ 07657

"Fishermen from Urk" - 23 minutes, color
Urk, Netherlands' fishing fleet.

"Fishing Safari" - 25 minutes, color
Fishing in Quebec, meal prepared by Indian guides.

"Fresh is Best" - 14 minutes, color
A comprehensive introduction to availability and uses of New England seafood.

"Harvest from the Sea" - 28 minutes, color
Fishing in the Republic of China; fish hatcheries.

"Island of Hope" - 18 minutes, color
Republic of China: includes increased farm and fish production.

"Ted Williams and the Atlantic Salmon" - 28 minutes, color
Techniques used to catch salmon.

"Two Faces of the Sea" - 24 minutes, color
Maine fishing community; harvesting the finest seafood in the world. (Available only to college level and above)

"The Sea and the Japanese" - 20 minutes, color
Various marine products, including sea farming to increase food resources.

Fishing USA - free catalog of films
c/o Association Films, Inc.
866 Third Avenue
New York, NY 10022

Royal Danish Consulate General
280 Park Avenue
New York, NY 10017

"Danish Fish" - 21 minutes, color, music
Modern Danish fish from catch to export.

"The Greenland Sea" - 12 minutes, color
Development of cod fishing in Denmark.

Virginia Polytechnic Institute
and State University
Film Library 12 Patton Hall
Attention: Film Librarian
Blacksburg, VA 24061
(703) 961-6718

"Dressing the Finfish" - 23 minutes, color, 16mm
Also 3/4" videotape cassette.

"Picking the Blue Crab" - 8 minutes, color, 16 mm
Also 3/4" videotape cassette.

Check your state media catalog for additional films.

FREE FILMSTRIP BIBLIOGRAPHY

U.S. Department of Commerce
9450 Gandy Boulevard
St. Petersburg, FL 33702

"Seafood - the Delicious Way to Stay Healthy"
Filmstrip, record, recipes, brochures, booklet

U.S. Department of Commerce
610 S. Canal Street
Room 816
Chicago, IL 60607

"Siren Song of Seafood"
Filmstrip, record, teacher's guide

National Marine Fisheries Service
Seafood Quality and Inspection Division
DOC/NOAA
Washington, DC 20235

3 filmstrips, 3 cassettes, teacher's manual, handouts

"The Great Protein Mystery"
"Buying with Confidence"
"The Mark of Quality"

Bureau of Commercial Fisheries
Washington, DC

"The Big Fish-In"

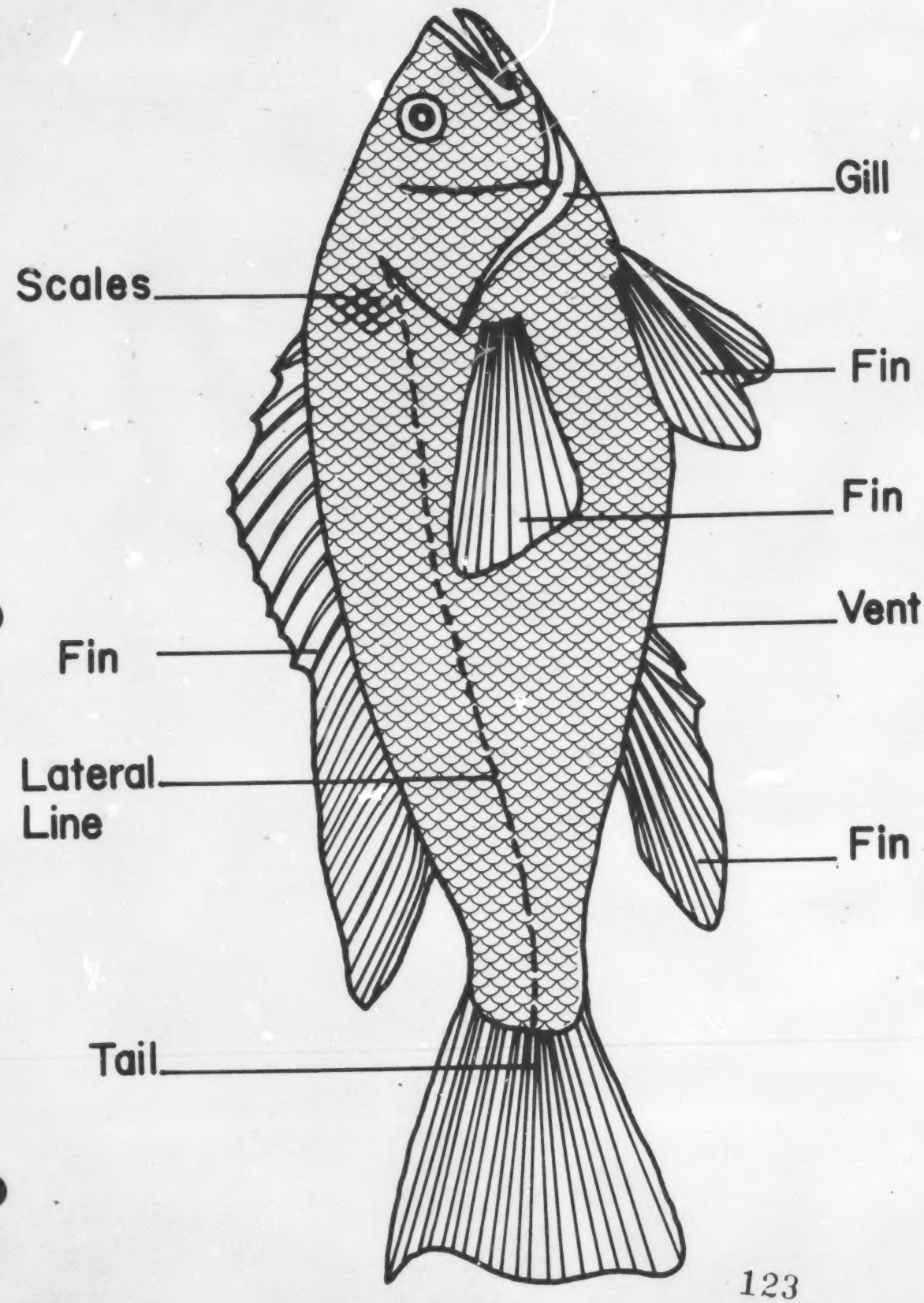
OTHER RESOURCE MATERIAL

Bureau of Marketing and Extension Services
Florida Department of Natural Resources
.02 Blount Street
Tallahassee, FL 32304

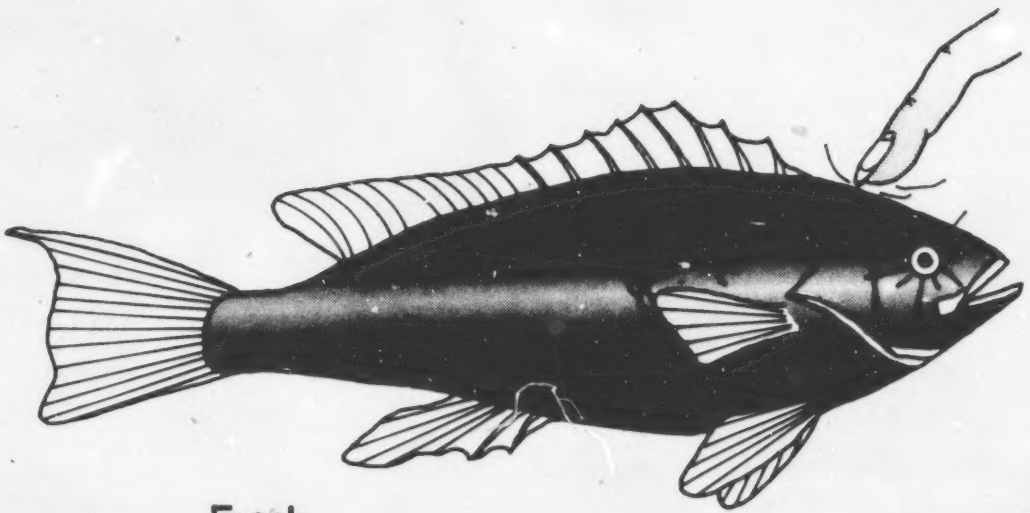
National Marine Fisheries
100 E. Ohio Street
Room 526
Chicago, IL 60611

In addition, check in your state for a Seafood Council, Department of Commerce office, National Marine Fisheries Service office, or other state agencies for free and inexpensive audio-visual materials.

APPENDIX

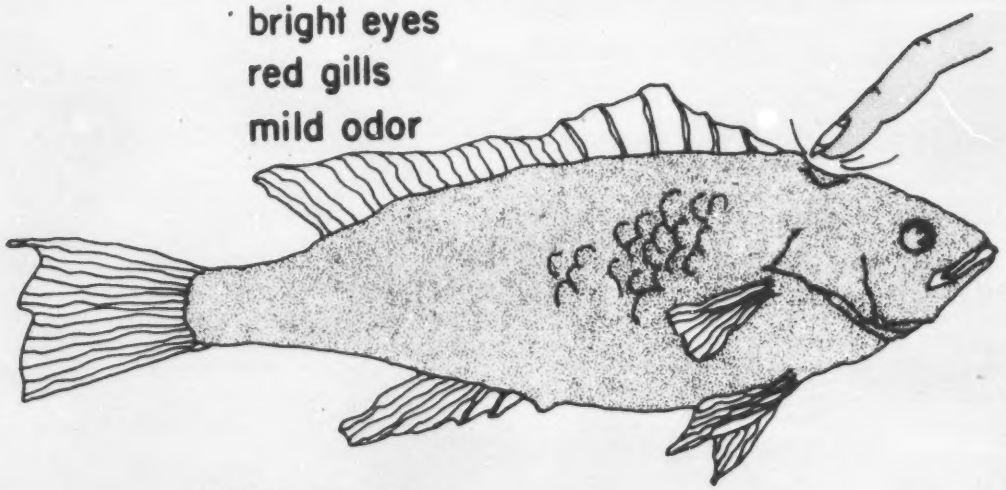

Gill
Scales
Fin
Fin
Vent
Fin
Lateral Line
Fin
Tail

CHARACTERISTICS OF QUALITY



Fresh

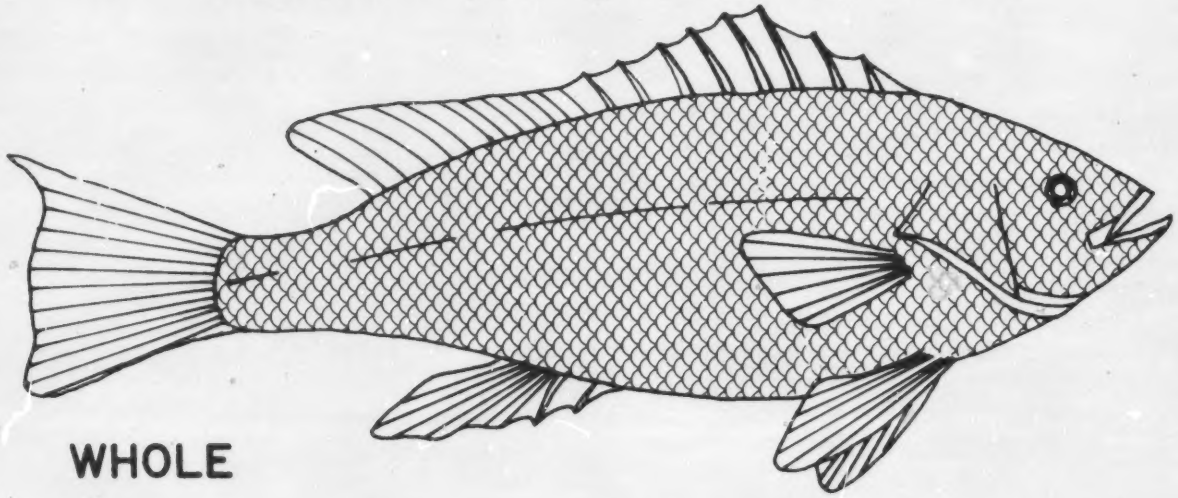
- firm flesh
- bright eyes
- red gills
- mild odor



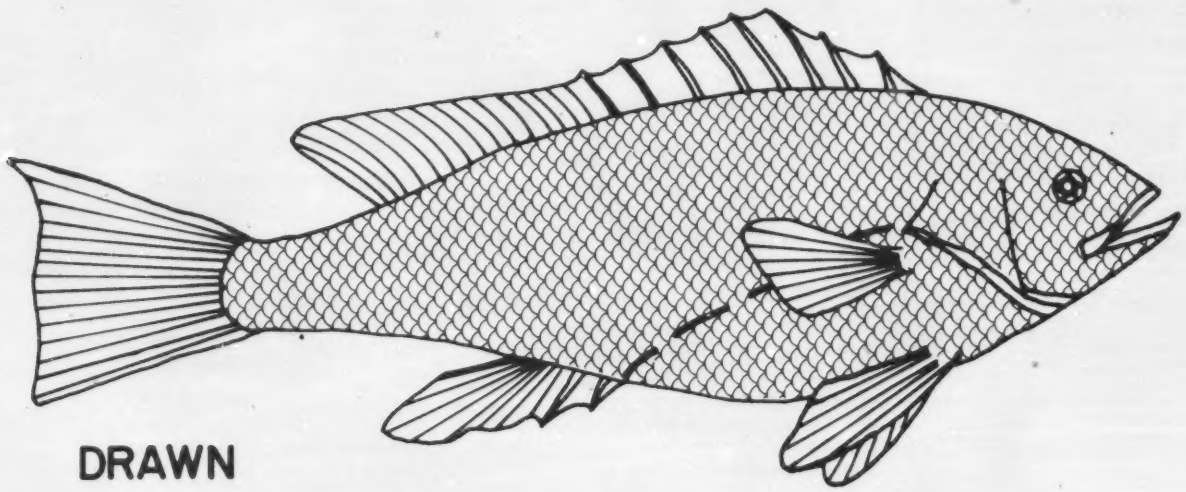
NOT Fresh

- spongy flesh
- dull sunken eyes
- greyish gills
- strong odor

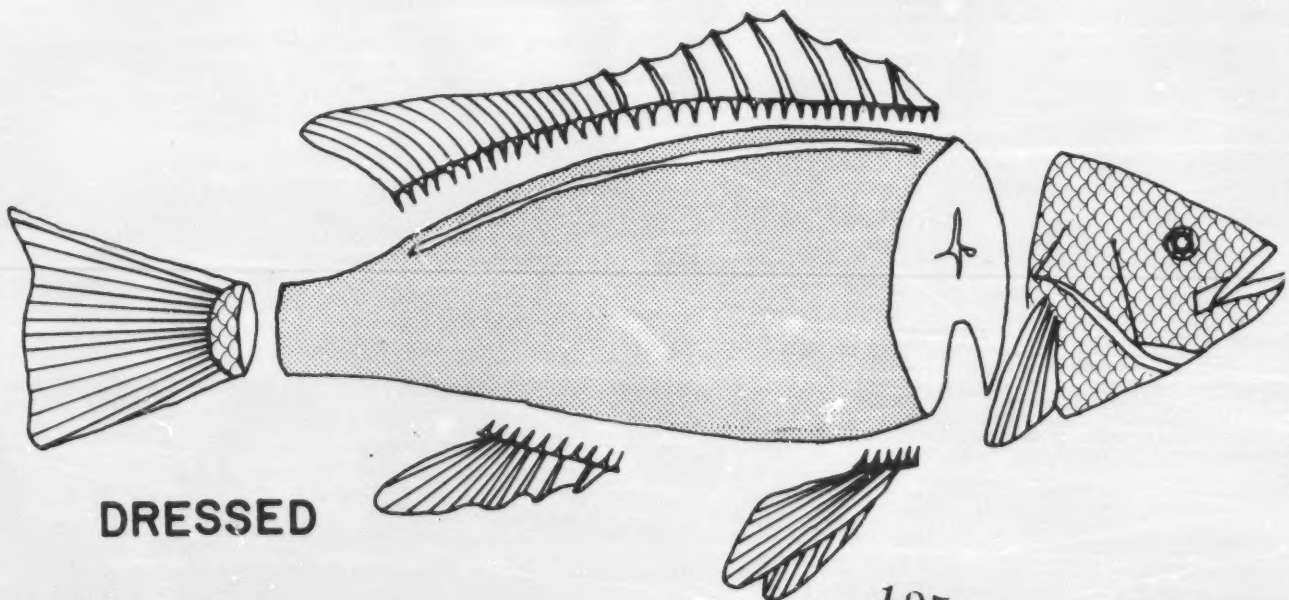
CUTS AND FORMS OF FISH



WHOLE

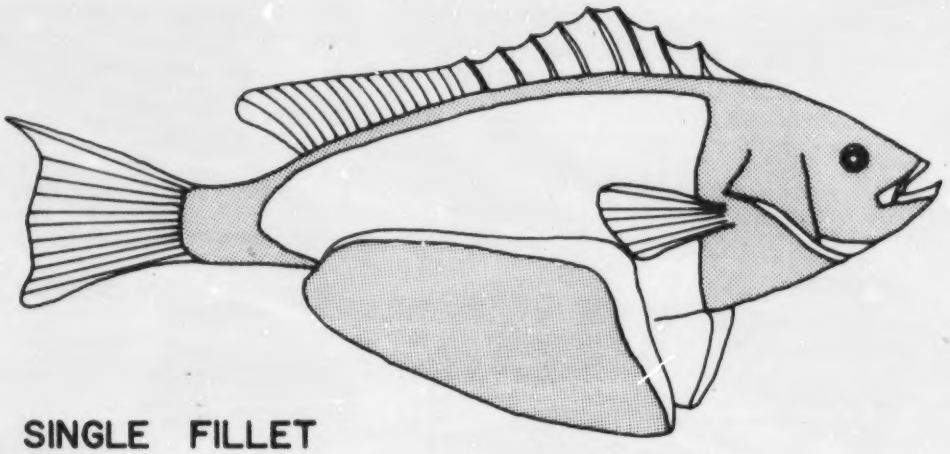


DRAWN



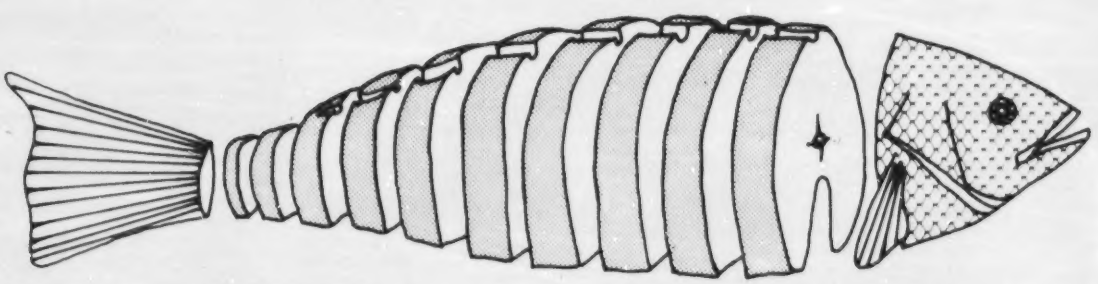
DRESSED

CUTS AND FORMS OF FISH (continued)

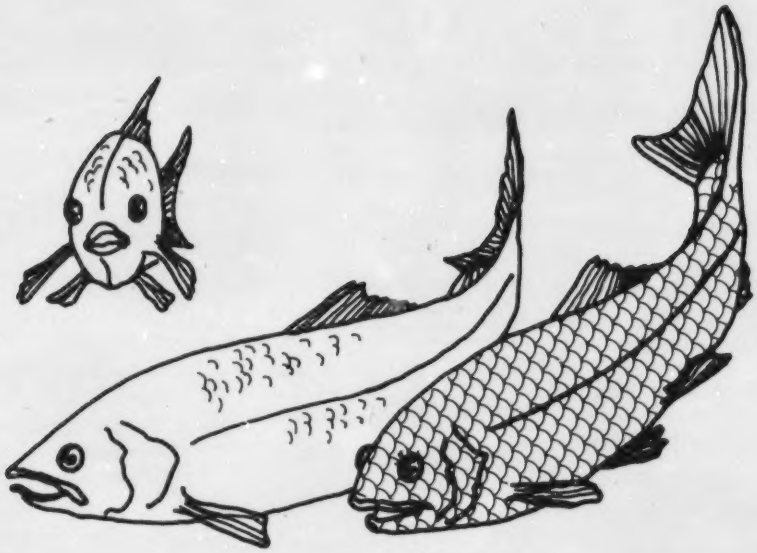


SINGLE FILLET

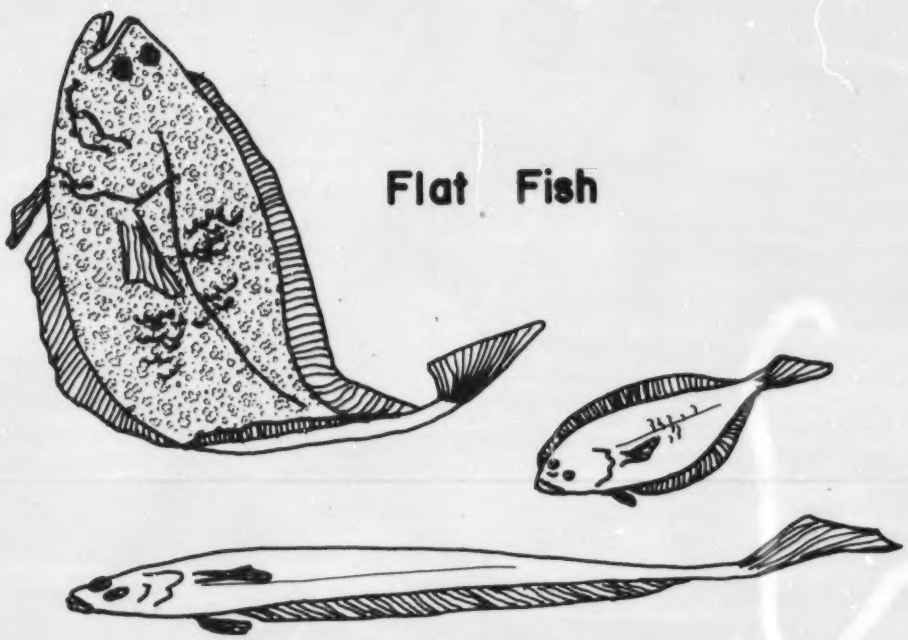
BUTTERFLY FILLET



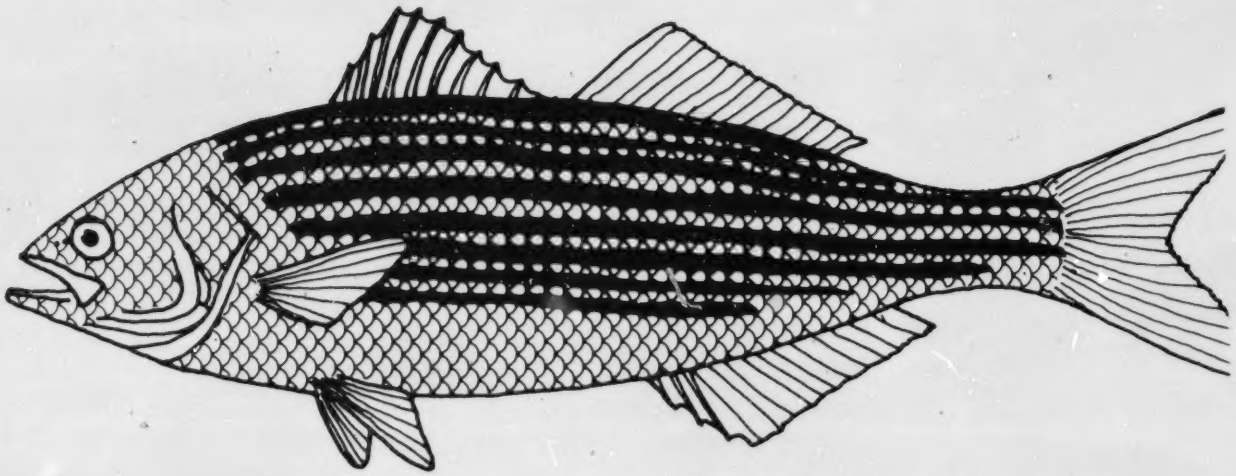
STEAKS and CHUNKS



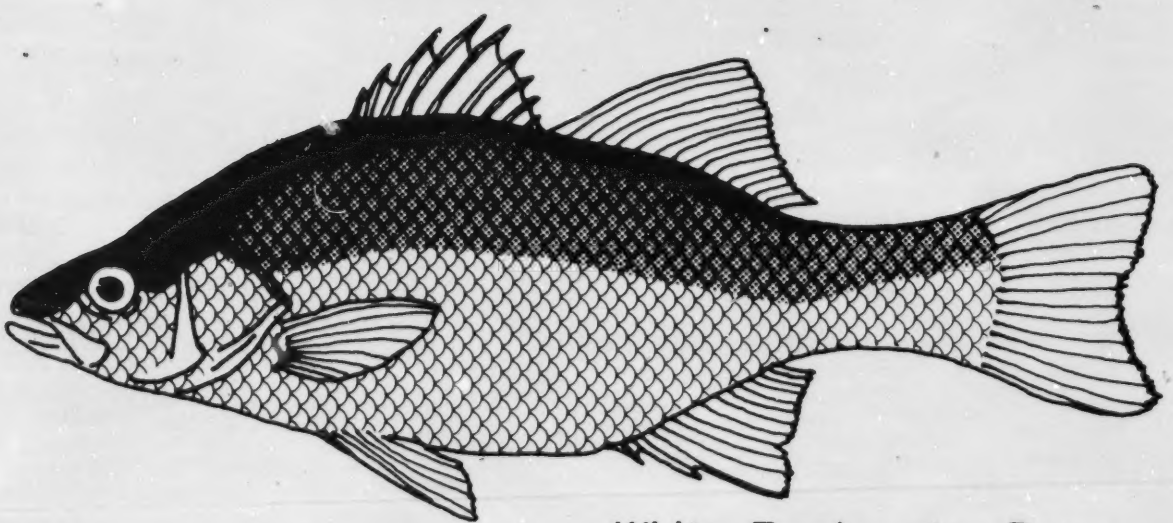
Round Fish



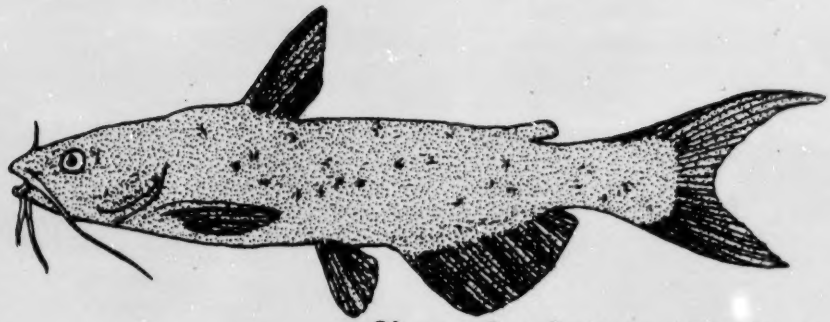
Flat Fish



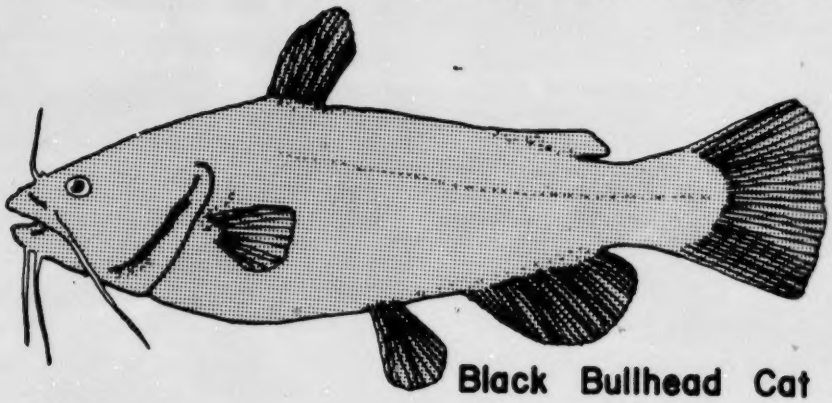
Striped Sea Bass



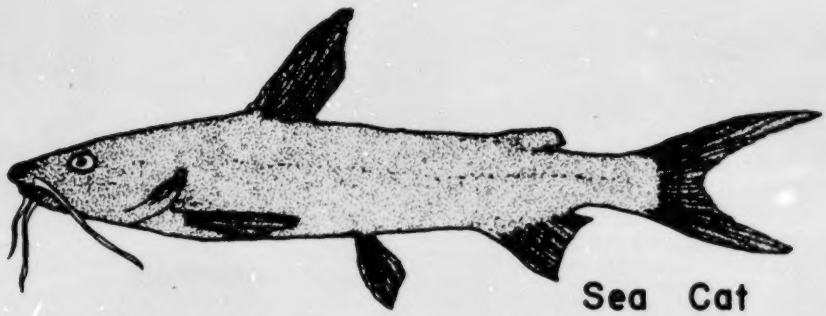
White Fresh water Bass



Channel Cat or Spotted Cat



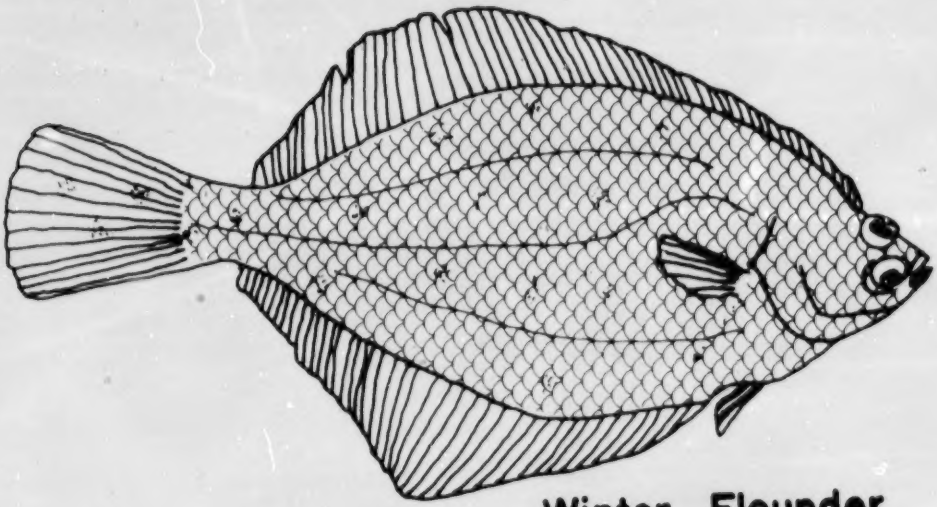
Black Bullhead Cat



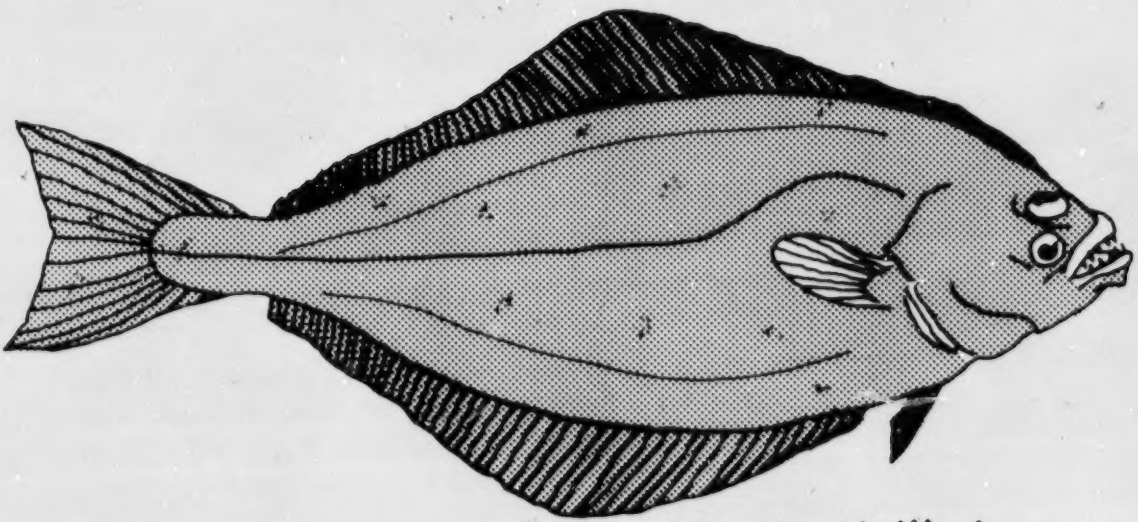
Sea Cat

Gaff-Topsail Cat

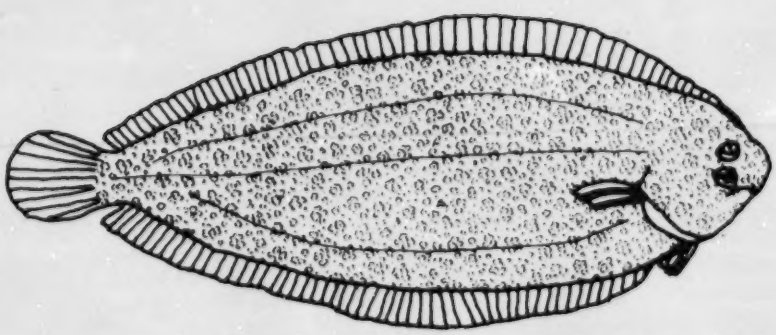
CATFISH



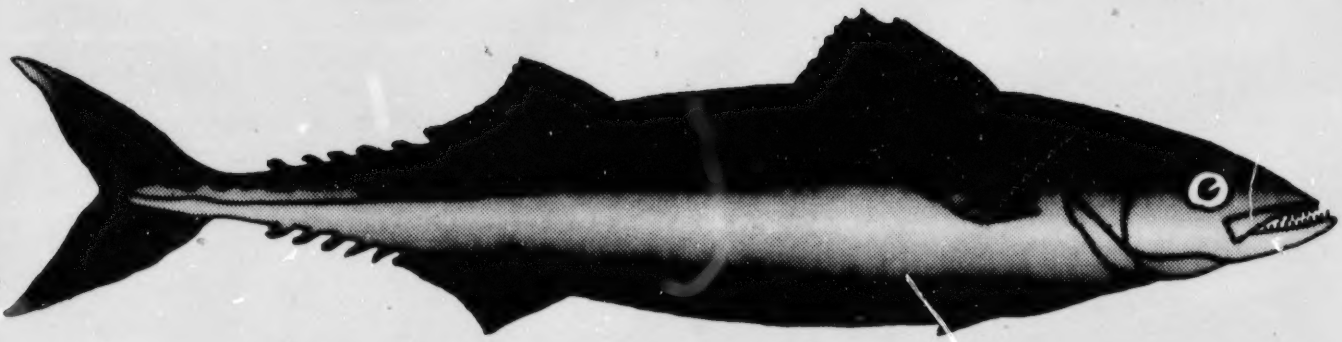
Winter Flounder



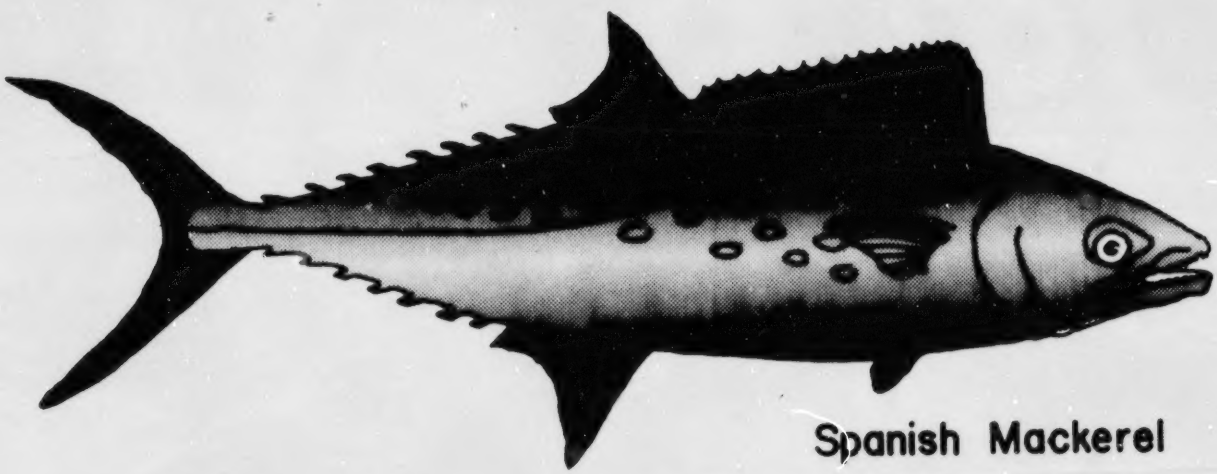
Atlantic Halibut



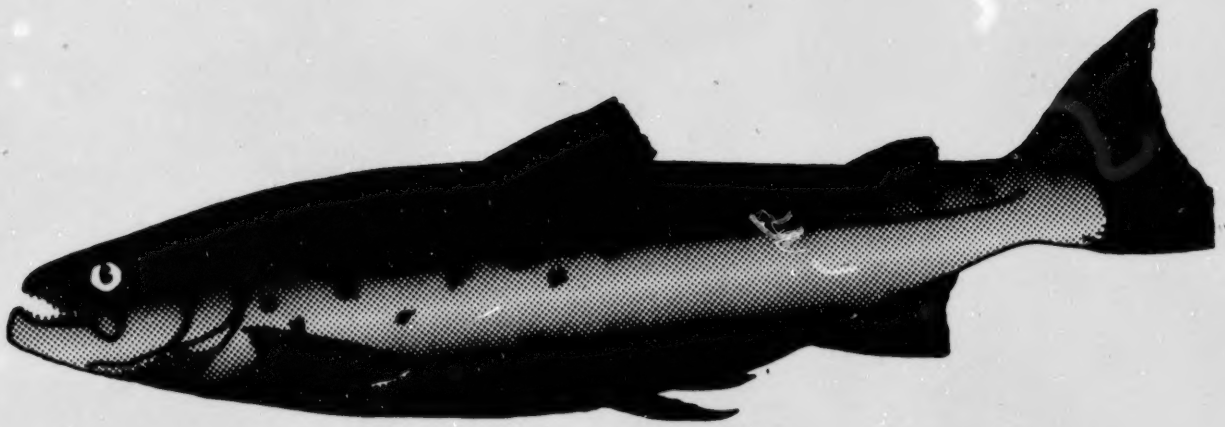
European Sole



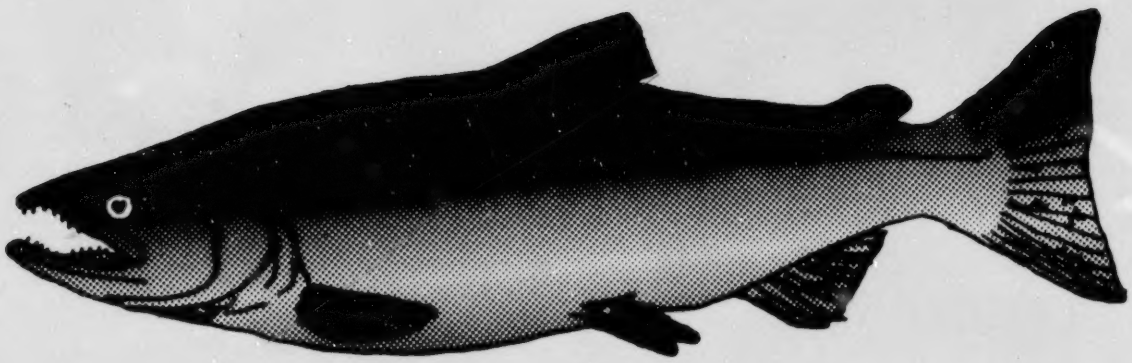
Atlantic Mackerel



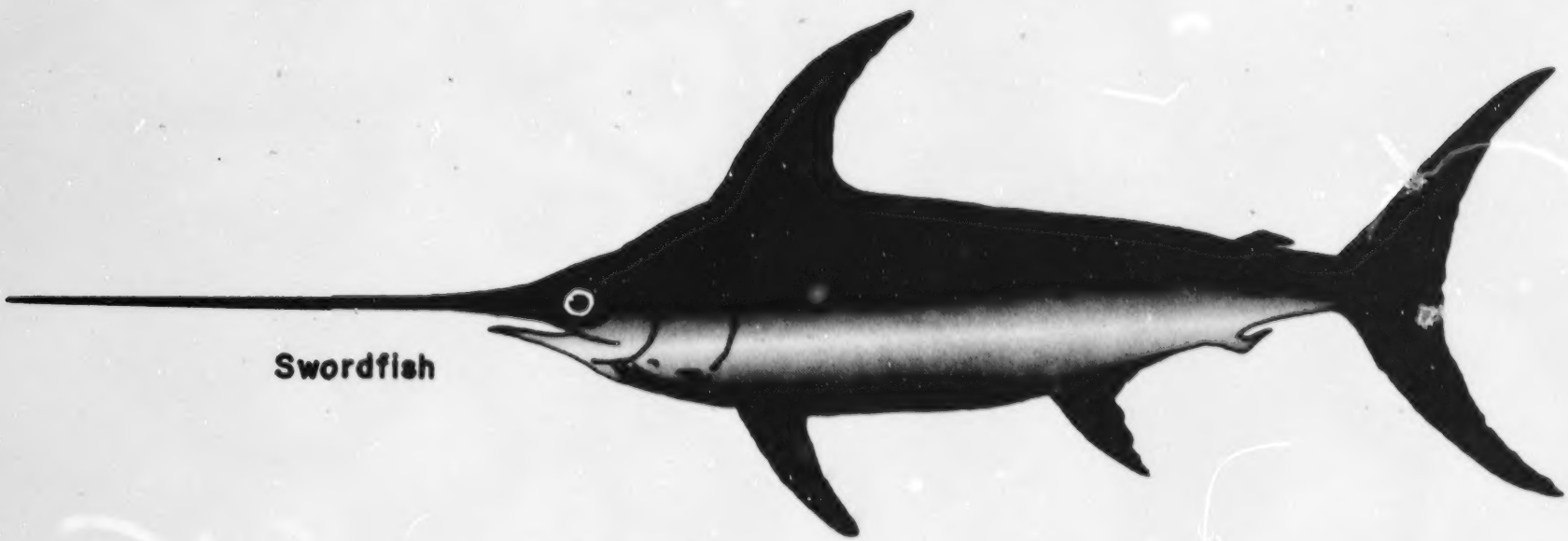
Spanish Mackerel



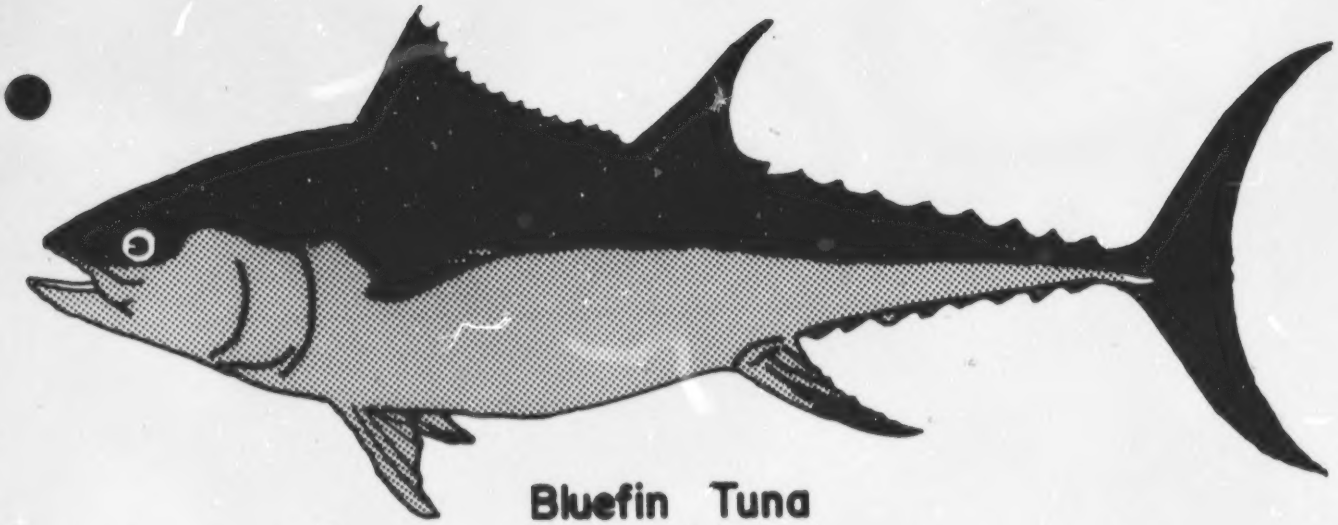
Atlantic Salmon



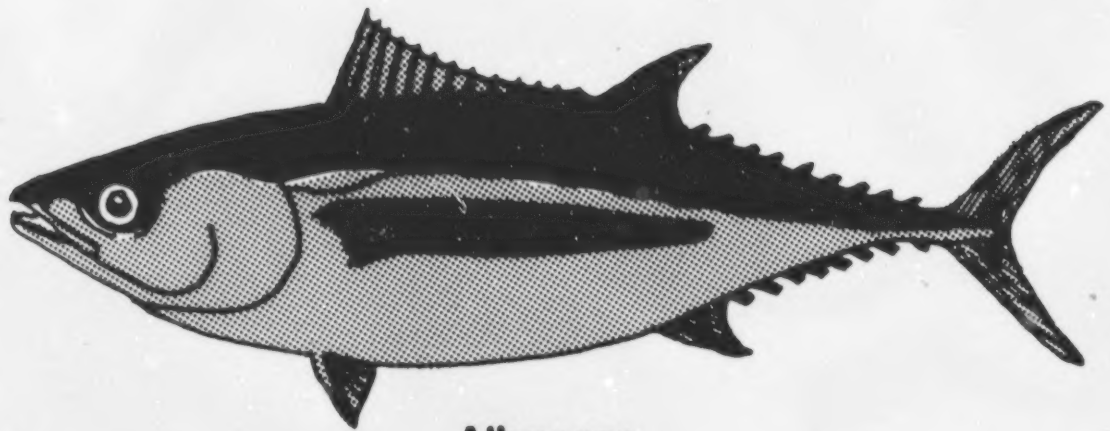
Chinook Salmon



Swordfish

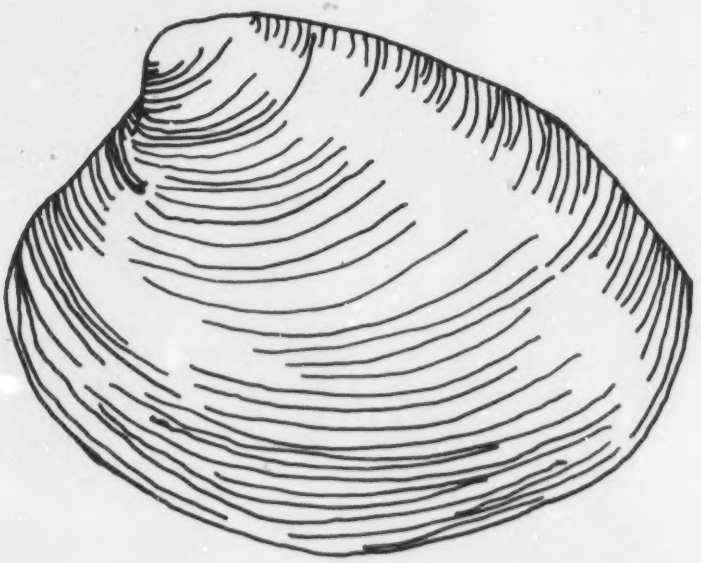


Bluefin Tuna



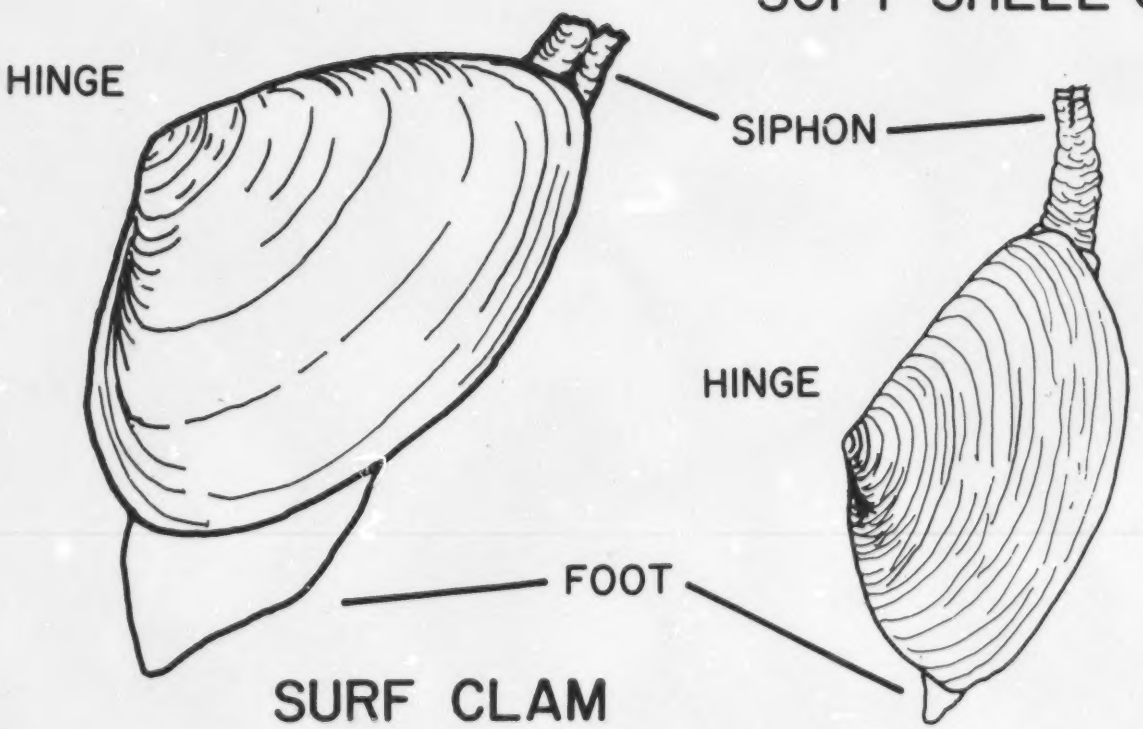
Albacore

Yellowfin Tuna

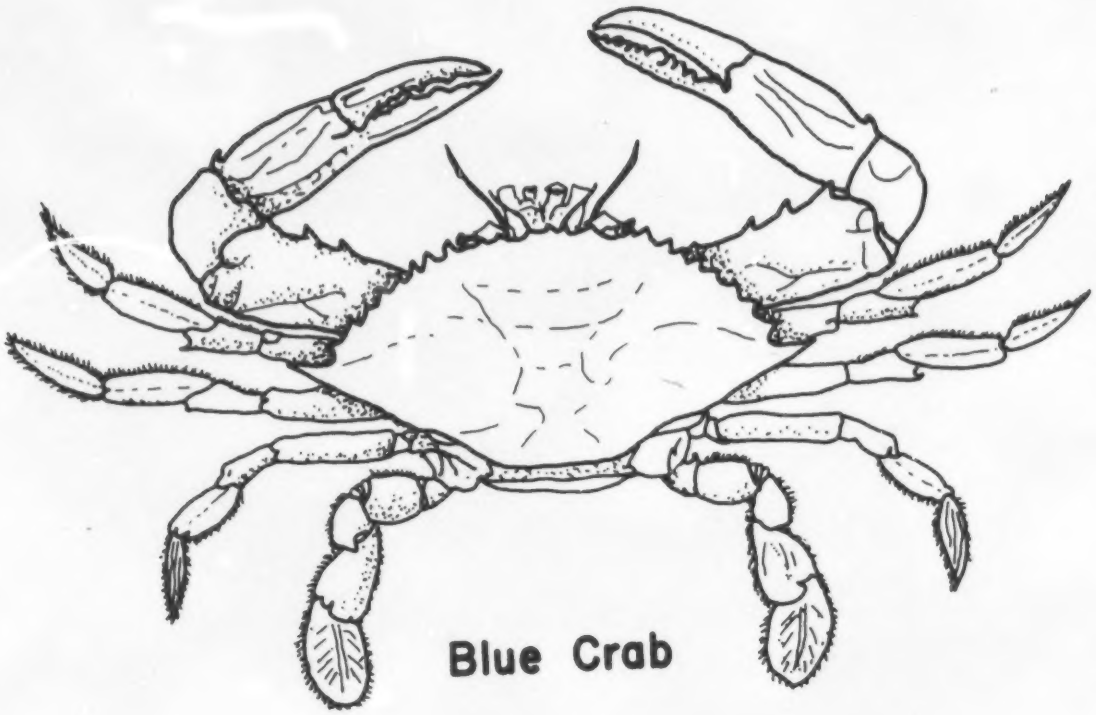


BUTTER CLAM

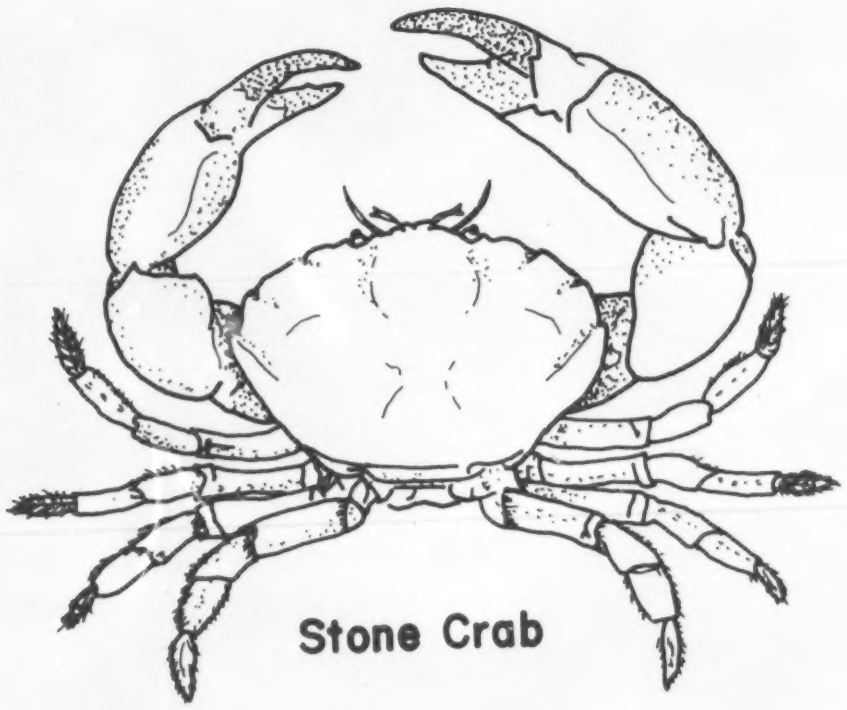
SOFT SHELL CLAM



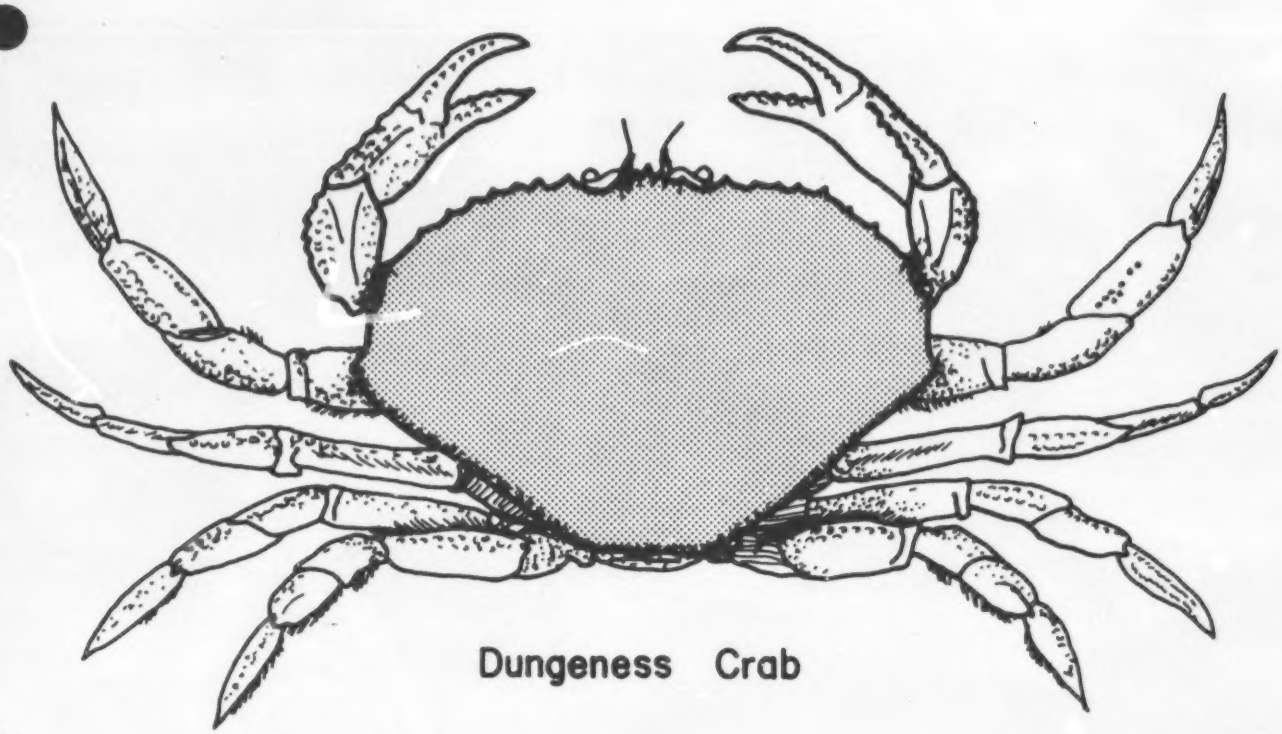
SURF CLAM



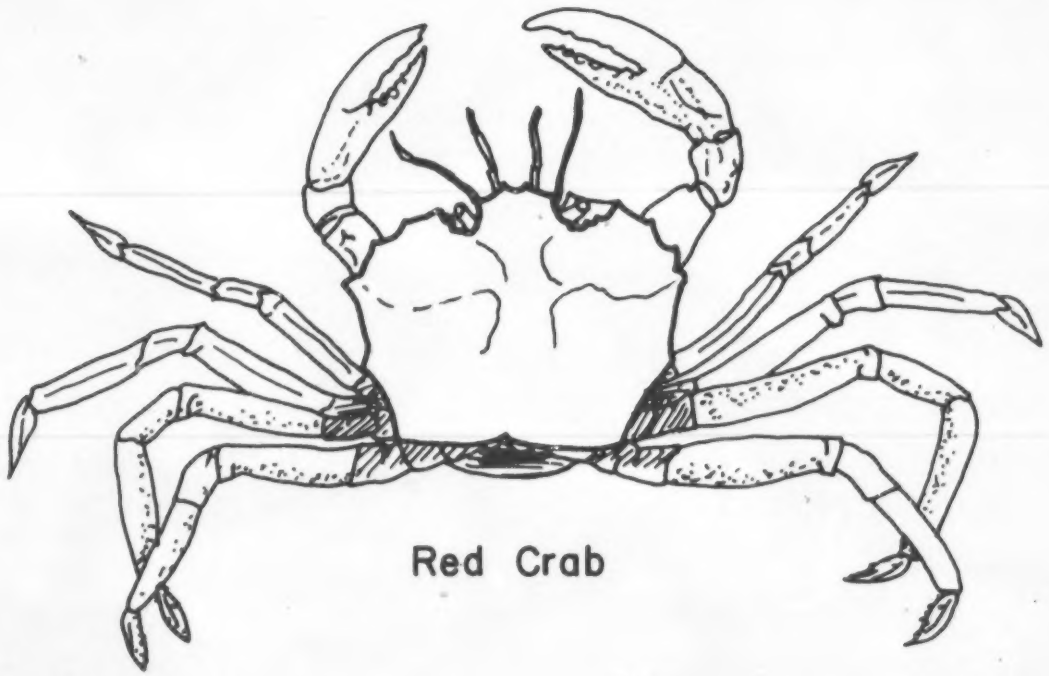
Blue Crab



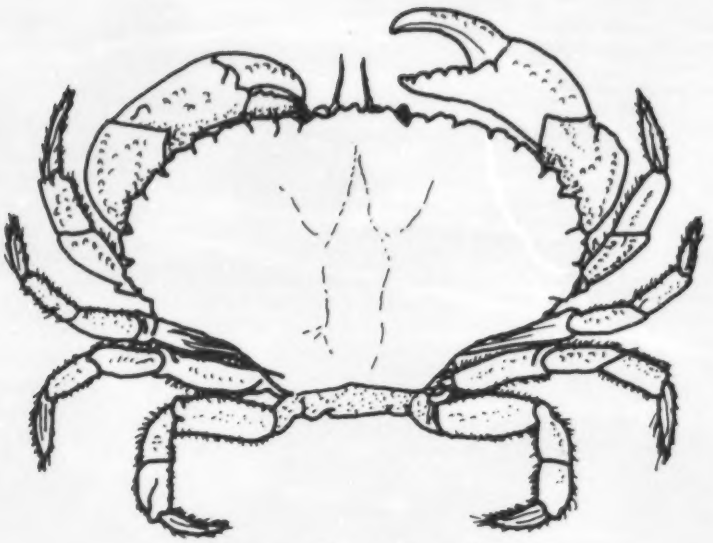
Stone Crab



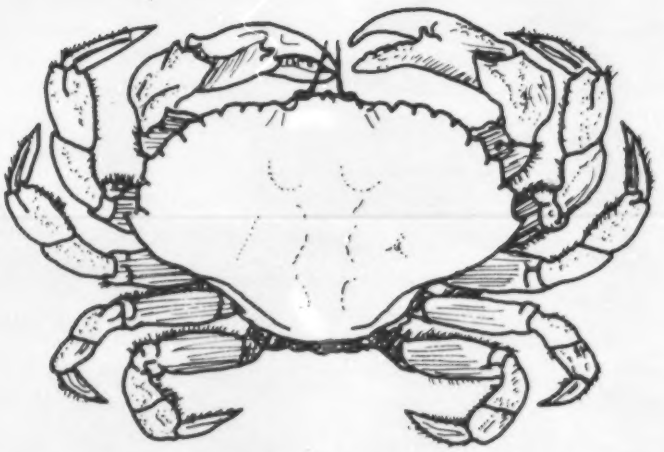
Dungeness Crab



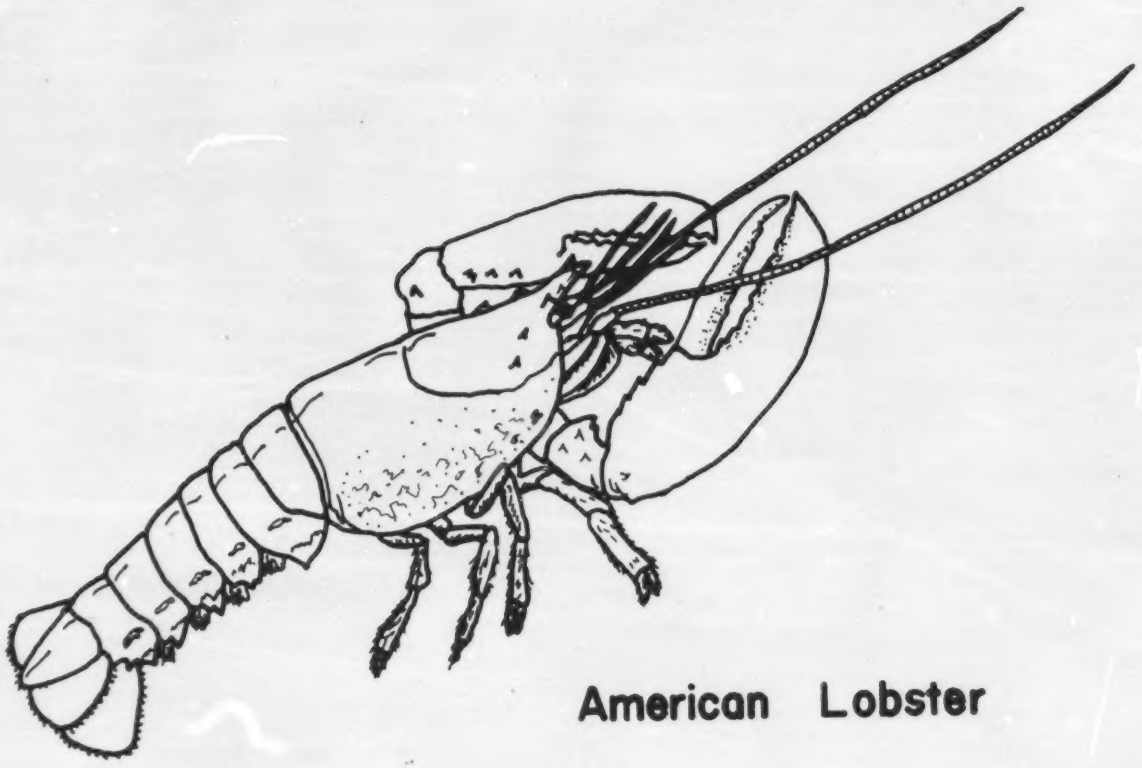
Red Crab



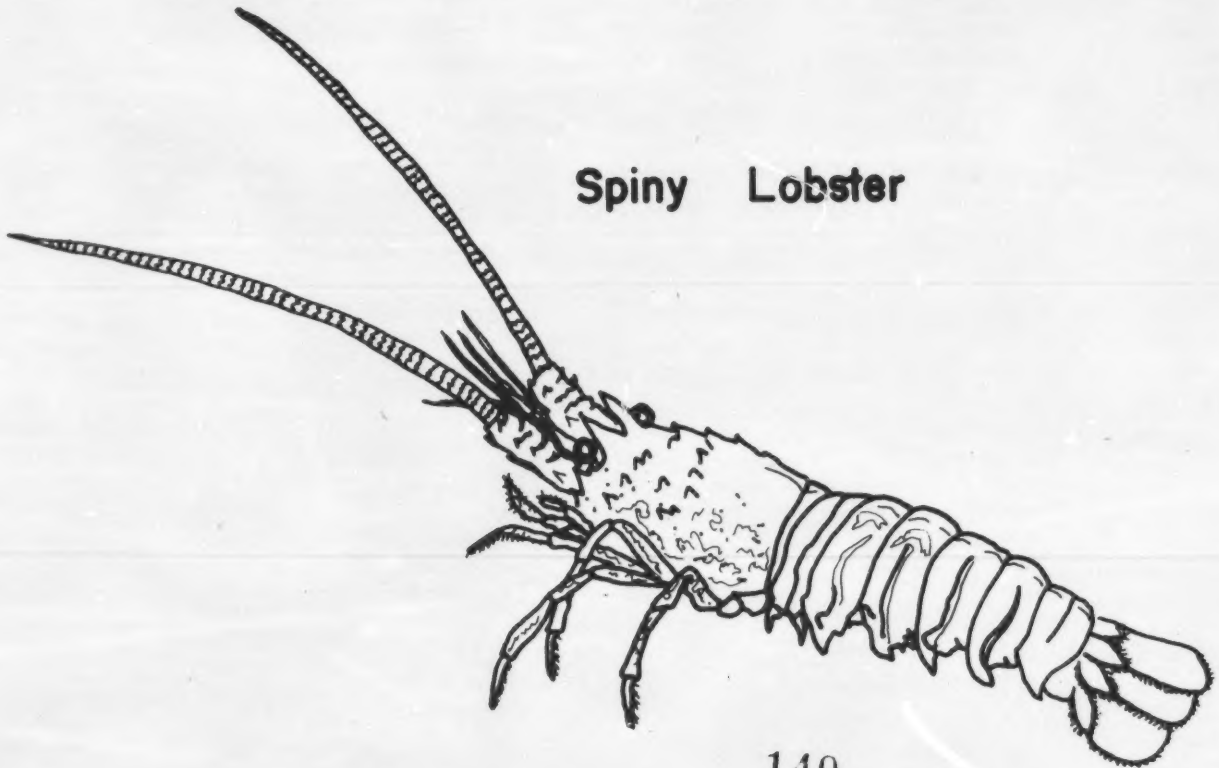
Jonah Crab



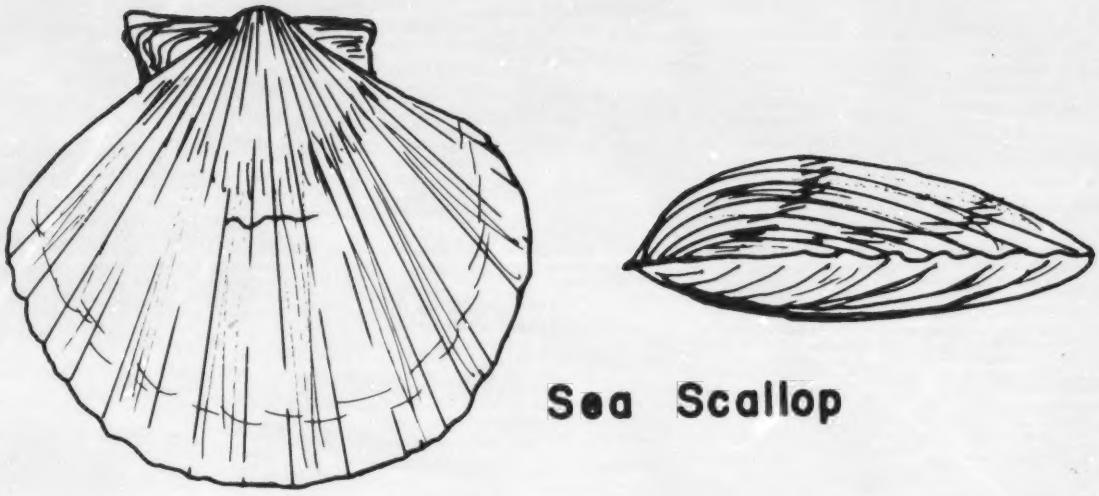
Rock Crab



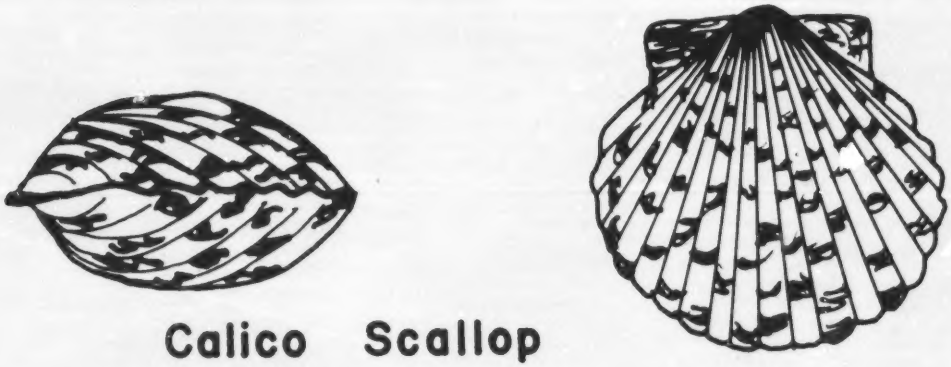
American Lobster



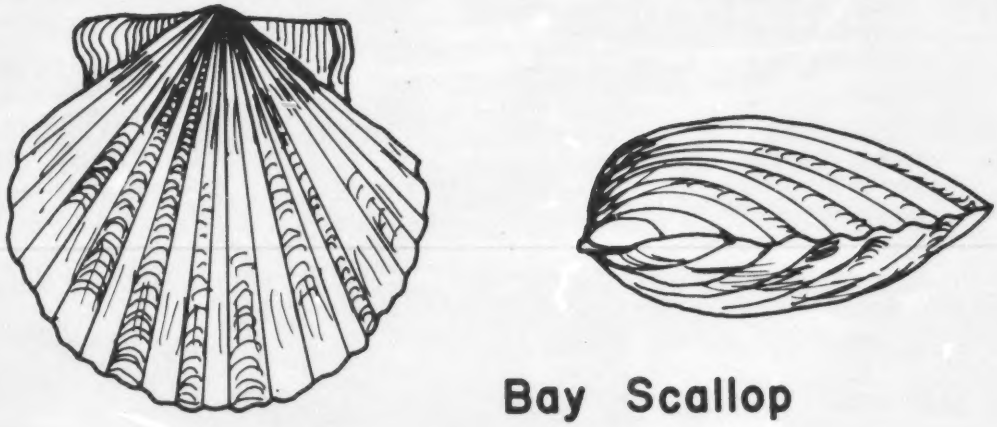
Spiny Lobster



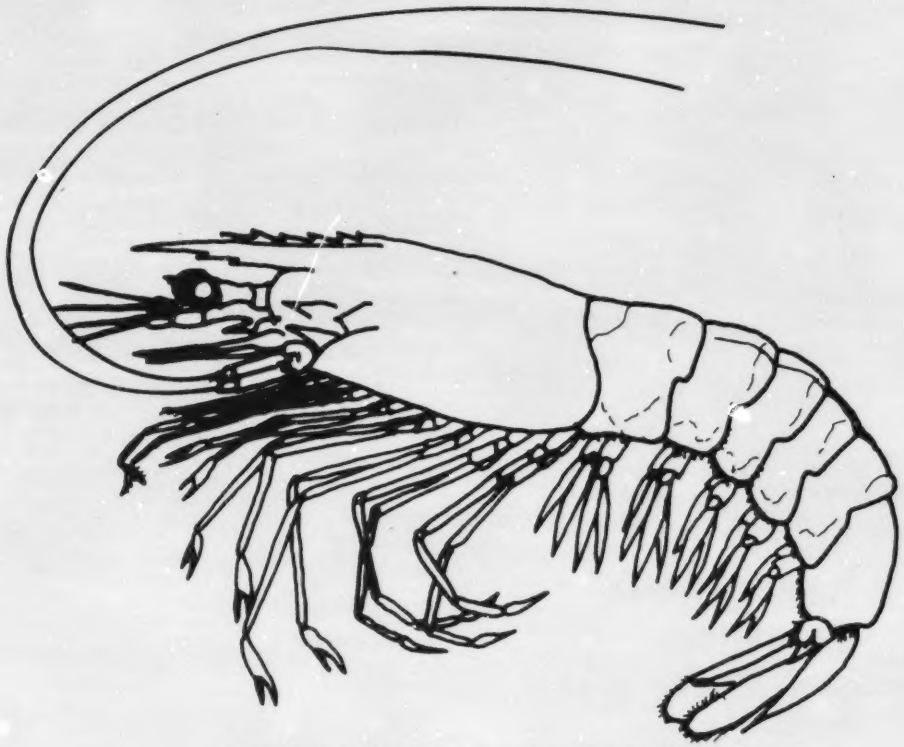
Sea Scallop



Calico Scallop

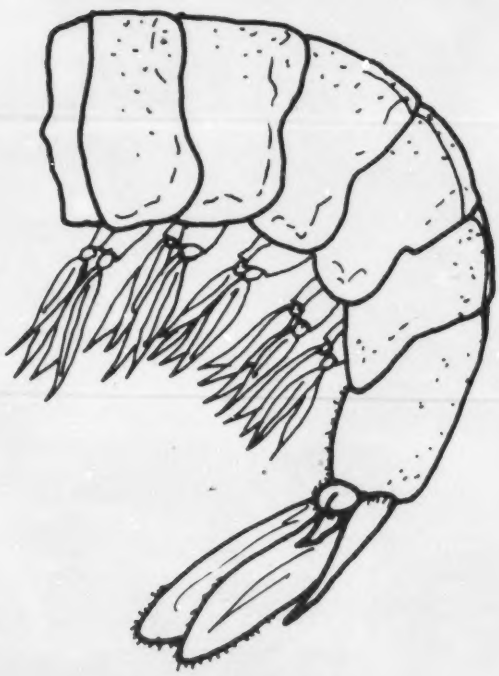


Bay Scallop

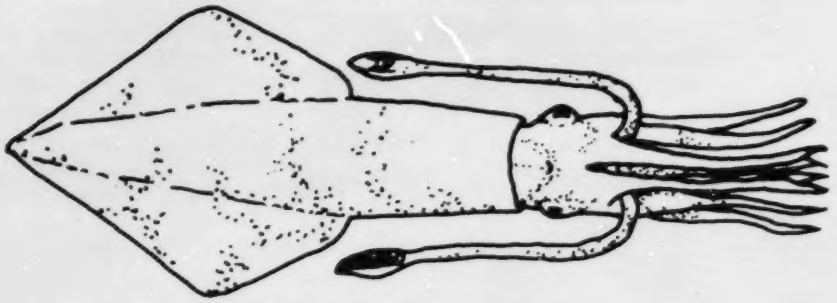


WHOLE SHRIMP

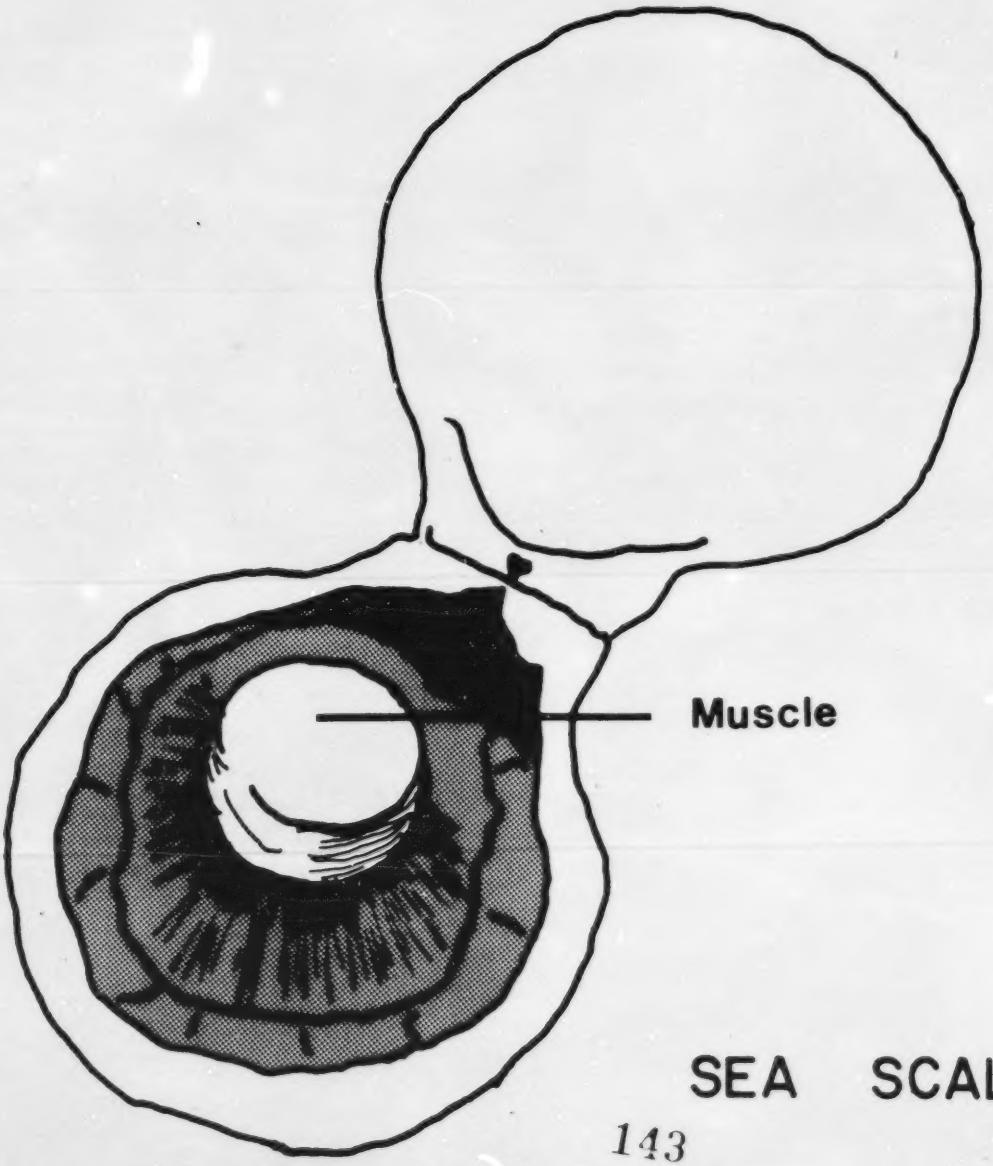
Normal Shrimp



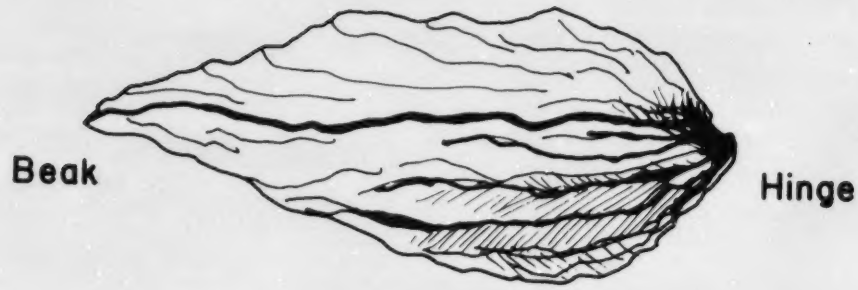
Black Spotting



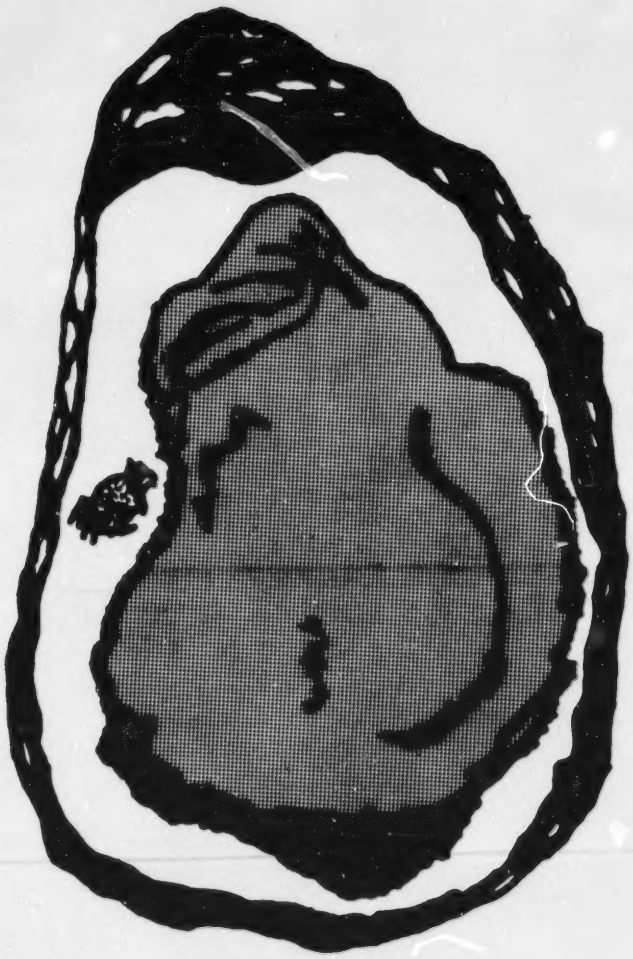
SQUID



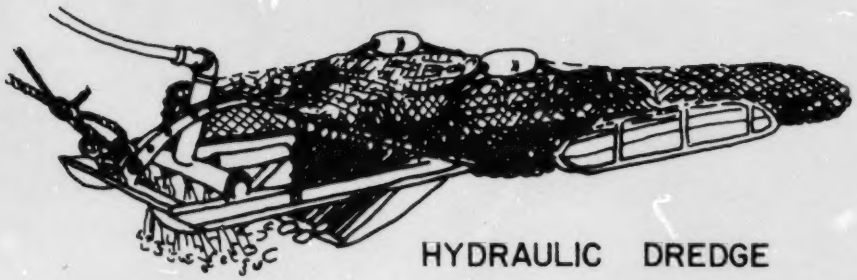
SEA SCALLOP



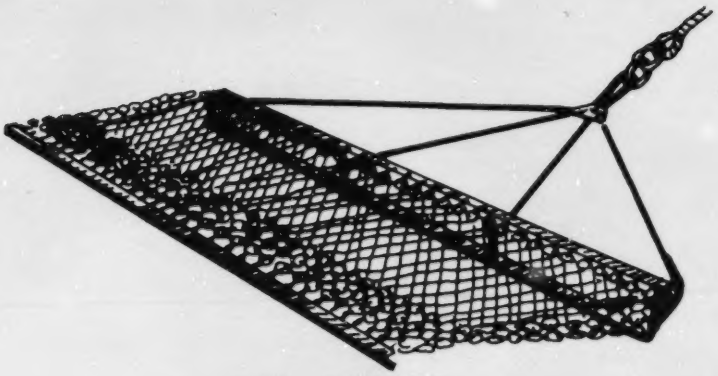
OYSTER



OYSTER WITH PEA CRAB



HYDRAULIC DREDGE

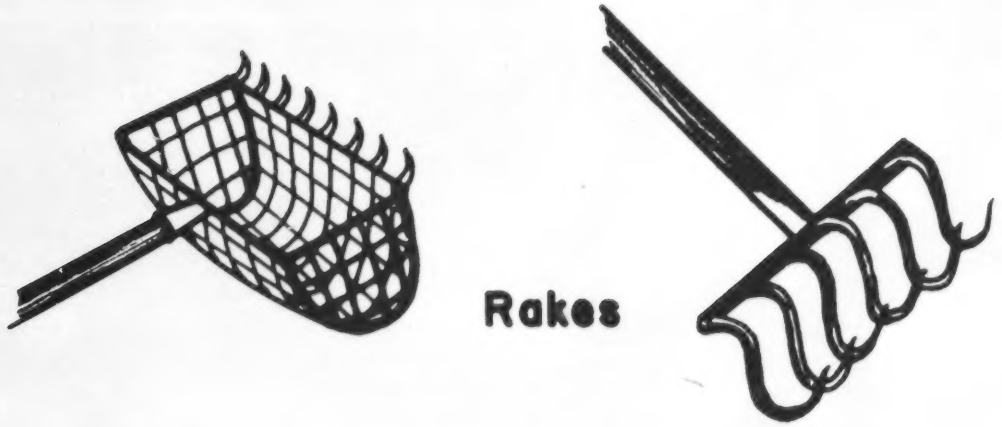


BAR DREDGE

CHAIN DREDGE

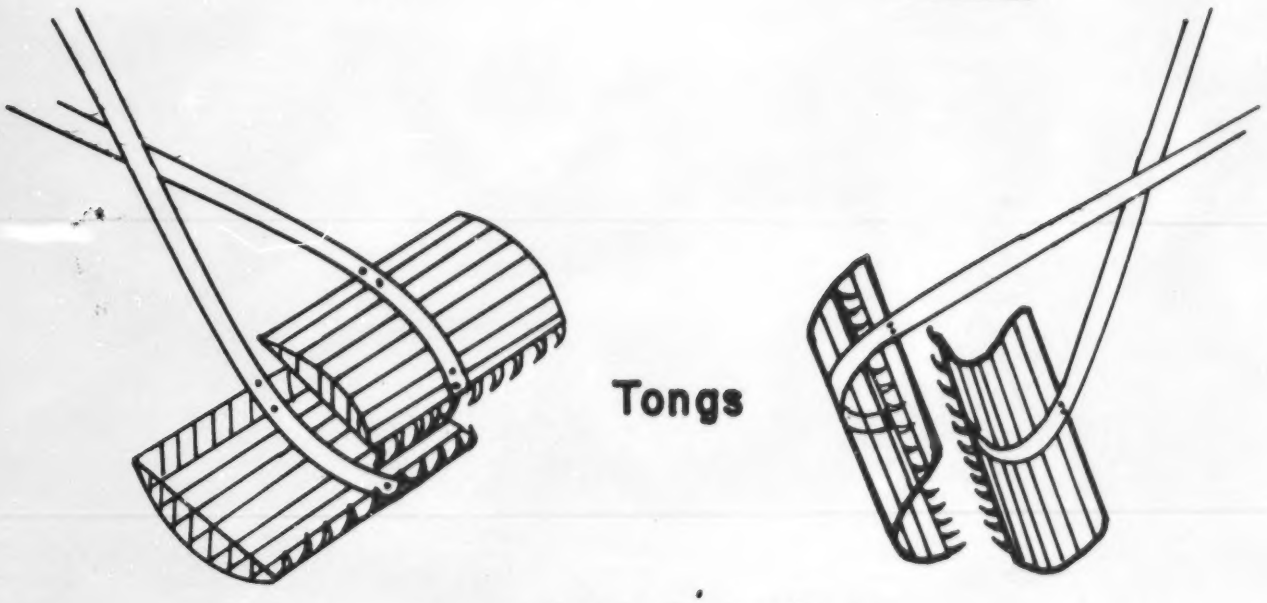
OYSTER DREDGE

DREDGES



Rakes

Hoes

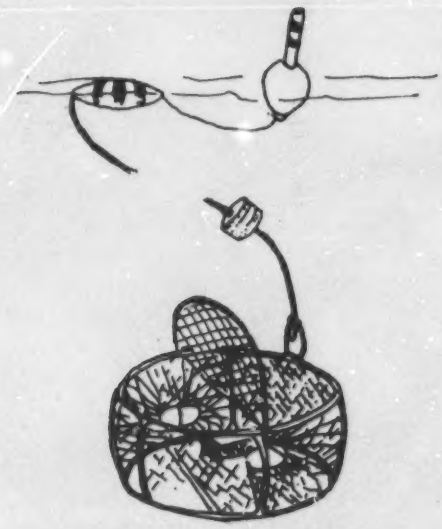


Tongs

Hand Operated

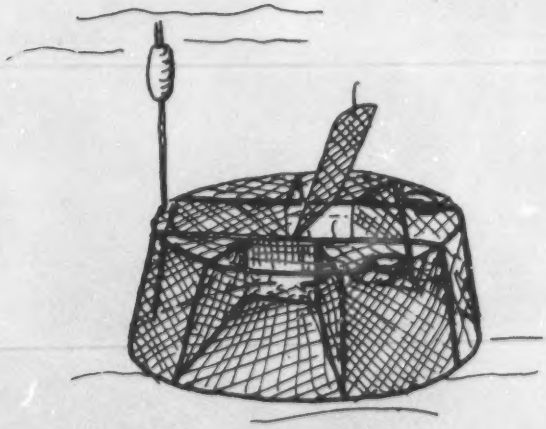
SHELLFISH GEAR

Atlantic Lobster Pot

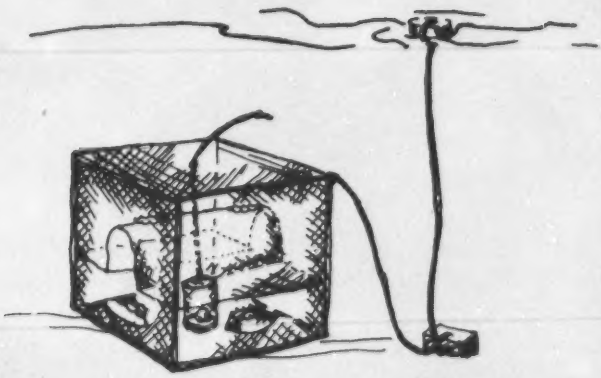


Dungeness Crab Pot

Eel Pot



King Crab Pot



Atlantic Hard Crab Pot

Fishery products prepared under approved, sanitary conditions.

Seafood products that are uniform in size, free of blemishes and defects, in excellent condition, and possess good flavor and all the characteristics of the species.